# INDEPENDENT ORBITER ASSESSMENT

ASSESSMENT OF THE
HYDRAULICS/
WATER SPRAY BOILER
SUBSYSTEM

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# MCDONNELL DOUGLAS ASTRONAUTICS COMPANY ENGINEERING SERVICES

### SPACE TRANSPORTATION SYSTEM ENGINEERING AND OPERATIONS SUPPORT

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INDEPENDENT ORBITER ASSESSMENT
ASSESSMENT OF THE HYDRAULICS/WATER SPRAY BOILER
SUBSYSTEM FMEA/CIL

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Independent Orbiter Assessment
Assessment of the Hydraulics/Water Spray Boiler Subsystem FMEA/CIL

### 1.0 EXECUTIVE SUMMARY

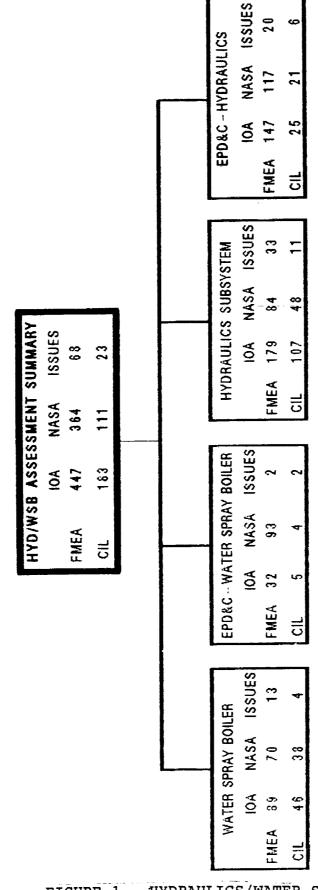
The McDonnell Douglas Astronautics Company (MDAC) was selected in June 1986 to perform an Independent Orbiter Assessment (IOA) of the Failure Modes and Effects Analysis (FMEA) and Critical Items List (CIL). Direction was given by the STS Orbiter and GFE Projects Office to perform the hardware analysis using the instructions and ground rules defined in NSTS 22206, Instructions for Preparation of FMEA and CIL, 10 October 1986.

The IOA effort first completed an analysis of the Hydraulics/Water Spray Boiler (HYD/WSB) hardware, generating draft failure modes and potential critical items. To preserve independence, this analysis was accomplished without reliance upon the results contained within the NASA FMEA/CIL documentation. The IOA results were then compared to the NASA FMEA/CIL baseline with proposed Post 51-L updates included. A resolution of each discrepancy from the comparison is provided through additional analysis as required. This report documents the results of that comparison for the Orbiter HYD/WSB hardware.

The IOA product for the HYD/WSB analysis consisted of 447 failure mode "worksheets" that resulted in 183 potential critical items being identified. Comparison was made to the NASA baseline (as of 19 November 1986) which consisted of 364 FMEAs and 111 CIL items. The comparison determined if there were any results which hadbeen found by the IOA but were not in the NASA baseline. This comparison produced agreement on all but 68 FMEAs which caused differences in 23 CIL items. Figure 1 presents a comparison of the proposed Post 51-L NASA baseline, with the IOA recommended baseline, and any issues.

The issues arose due to differences between the NASA and IOA FMEA/CIL preparation instructions. NASA had used an older groundrules document which has since been superseded by the NSTS 22206 used by the IOA. After comparison, there were no discrepancies found that were not already identified by NASA, and the remaining issues may be attributed to differences in ground rules.

# HYDRAULICS/WATER SPRAY BOILER ASSESSMENT OVERVIEW



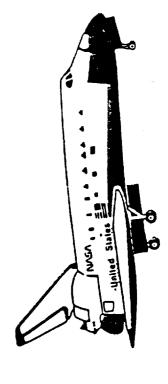


FIGURE 1 - HYDRAULICS/WATER SPRAY BOILER FMEA/CIL ASSESSMENT

### 2.0 INTRODUCTION

### 2.1 Purpose

The 51-L Challenger accident prompted the NASA to readdress safety policies, concepts, and rationale being used in the National Space Transportation System (NSTS). The NSTS Office has undertaken the task of reevaluating the FMEA/CIL for the Space Shuttle design. The MDAC is providing an independent assessment of the proposed Post 51-L Orbiter FMEA/CIL for completeness and technical accuracy.

### 2.2 Scope

The scope of the independent FMEA/CIL assessment activity encompasses those Shuttle Orbiter subsystems and GFE hardware identified in the Space Shuttle Independent FMEA/CIL Assessment Contractor Statement of Work. Each subsystem analysis addresses hardware, functions, internal and external interfaces, and operational requirements for all mission phases.

### 2.3 Analysis Approach

The independent analysis approach is a top-down analysis utilizing as-built drawings to breakdown the respective subsystem into components and low-level hardware items. Each hardware item is evaluated for failure mode, effects, and criticality. These data are documented in the respective subsystem analysis report, and are used to assess the proposed Post 51-L NASA and Prime Contractor FMEA/CIL. The IOA analysis approach is summarized in the following Steps 1.0 through 3.0. Step 4.0 summarizes the assessment of the NASA and Prime Contractor FMEA/CIL which is documented in this report.

- Step 1.0 Subsystem Familiarization
  - 1.1 Define subsystem functions
  - 1.2 Define subsystem components
  - 1.3 Define subsystem specific ground rules and assumptions
- Step 2.0 Define subsystem analysis diagram
  - 2.1 Define subsystem
  - 2.2 Define major assemblies
  - 2.3 Develop detailed subsystem representations
- Step 3.0 Failure events definition
  - 3.1 Construct matrix of failure modes
  - 3.2 Document IOA analysis results

- Step 4.0 Compare IOA analysis data to NASA FMEA/CIL
  - 4.1 Resolve differences
  - 4.2 Review in-house
  - 4.3 Document assessment issues
  - 4.4 Forward findings to Project Manager

### 2.4 Ground Rules and Assumptions

The HYD/WSB ground rules and assumptions used in the IOA are defined in Appendix B. The subsystem specific ground rules were defined to provide necessary additions and clarifications to the ground rules and assumptions contained in NSTS 22206.

### 3.0 SUBSYSTEM DESCRIPTION

### 3.1 Design and Function

The hydraulic subsystem is made up of three independent hydraulic systems, each with its own APU/pump, reservoir, water spray boiler for APU lube oil and hydraulic fluid cooling, and distribution systems. A typical system is shown in Figure 2.

### Water Spray Boiler

The water spray boiler (WSB) system consists of three identical independent units, one for each APU/hydraulic system. Each WSB is used while its associated APU is active in order to cool the APU lubricating oil and the Orbiter hydraulic fluid. Each WSB consists of the following components:

- o Water tank with gaseous nitrogen (GN<sub>2</sub>) pressurization
- o Internal boiler
- o Electronic controllers (two per system)
- o Heaters
- o Temperature and pressure sensors

The WSB stores water in a bellows-type storage tank, which is pressurized by nitrogen to provide positive water expulsion to feed the boiler. The WSB system operates in either a pool or spray mode. The hydraulic fluid and APU lubricating oil pass through the boiler in a set of tubes which are either immersed in water (pool mode) or sprayed with water from three hydraulic fluid water spray bars and two APU lube oil water spray bars (spray mode).

During ascent and entry the boiler operates in the pool mode. As the vehicle ascends, the APU lube oil heats up. Eventually the boiler water precharge boils off, and the boiler goes into the spray mode (the hydraulic fluid usually does not heat up enough during ascent to require any spray cooling). During the lower part of entry, when the boiler temperature (i.e., the boiling point of water) reaches 188 degrees F, the WSB returns to the pool mode. The spray bars begin discharging water to fill the boiler. As the water reaches the liquid level sensors, the spray is turned off to prevent the boiler from overfilling. The water that is boiled off exits the Orbiter through a steam duct located to the right of the vertical stabilizer.

### EPD&C - Water Spray Boiler

The EPD&C support for a typical Water Spray Boiler unit is illustrated in Figure 3. The EPD&C system provides AC and DC power to the WSB related transducers, signal conditioners and logic circuits. Remote power controllers (RPC) in the Aft Power

## ORIGINAL PAGE IS OF POOR QUALITY GHT TANK EFFECTORS/ACTUATORS/CONTROL VALVES CONTROLLER A CONTROLLER 6 WATER SPRAY BOILER SEME CONTROL VALVES LABBING BEAR RUDDEA/ OPEEDBAKE BOBY FLAD ET UMBRICAL SHEE THE ELEVORS BRAKES 3 4 TRANSDUCER AND MEATER LOCATIONS MEN - PESSURE RELIEF O GBE AND ELECTRICAL INTERFACES 1. TYPICAL FOR 3 MYSRAMIC SYSTEMS MYBRAULIC BYPASS VALVE BINGLE FREGII NX COMMON TO ALL 3 NYDRAILLE SYSTEMS FILTER MODULE ASSEMBLY OMITTED FOR CLAMITY: ACCUMBLATO CASE BRAIN REBERYOLA FREOM HEAT EXCHANGEN 1 PRESSURE -- ACTUATED UNLOADER VALVE AUXILIARY POWER UNIT CINCULATION PUR GEAR

Figure 2 - HYDRAULICS/WATER SPRAY BOILER DIAGRAM

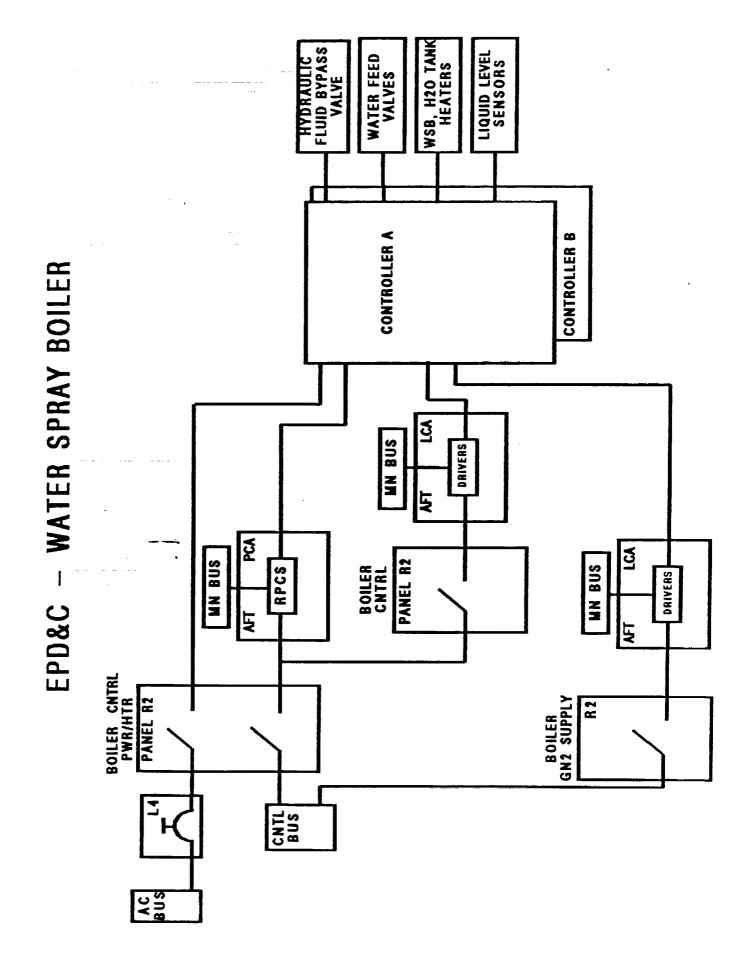


Figure 3 - EPD&C - WATER SPRAY BOILER DIAGRAM

Control Assembly (PCA) provide the 28 Vdc required to operate the WSB heaters and solenoid and motor operated valves. Hybrid circuit drivers in aft load control assemblies (LCA) supply power to the boiler control circuits and GN<sub>2</sub> supply control circuits respectively in the boiler controllers. Control voltage required to activate the drivers are supplied through boiler control switches located on Orbiter panel R2.

The WSB has two redundant controllers, A and B. Only one controller is used at a time. The controller regulates the water spray and the hydraulic fluid bypass valve (bypasses WSB at 190 degrees F; flows through WSB at 210 degrees F) based on fluid outlet temperature transducers. Controller A provides for computation of WSB water tank quantity by the SM GPC based on water tank temperature transducer and GN<sub>2</sub> line pressure readings. Controller B is identical to Controller A except that the following outputs are lost.

- o H<sub>2</sub>O quantity computation
- o GN<sub>2</sub> tank temperature
- o GN<sub>2</sub> regulator pressure
- o H<sub>2</sub>Ö tank pressure
- o Hydraulic bypass valve position indicator

The water boiler, water tank, and steam vent are equipped with heaters to prevent freeze-up in orbit. The heaters are cycled automatically by the WSB controller. Each controller controls one set of redundant heaters.

### Hydraulic System

The hydraulic system provides the hydraulic power to operate the aerosurface controls (elevons, rudder/speed brake, and body flap), ET umbilical retractors (LH2 and LO2), SSME thrust vector control actuators, SSME control valves, landing gear retract and deployment, main wheel brakes and antiskid control, and nosewheel steering. Hydraulic power is generated by APU driven pumps. Two operational systems are required to provide the maximum aerosurface rotational rates needed for worst-case descent conditions.

Each hydraulic system uses a hydraulic fluid reservoir, which stores and provides fluid to the inlet side of an APU-driven variable-displacement pump. Upon demand, the fluid is pumped through a check valve, a filter, and fluid lines which incorporate a precharged accumulator. The accumulator serves to absorb system pressure surges by means of a priority valve and provides pressurization to the reservoir. An electric motor driven constant displacement circulation pump provides low pressure hydraulic power for hydraulic system thermal conditioning and high pressure hydraulic power for accumulator recharging during the on-orbit flight phase.

### EPD&C - Hydraulics

The EPD&C support to the hydraulics system is illustrated in Figure 4. The switches, PBIs and circuit breakers which allow the crew to configure and control the EPD&C, and the components of the hydraulic system are located on panels on the flight deck. The electrical power is controlled and distributed by use of power controller assemblies and load controller assemblies. These assemblies are comprised of buses, resistors, fuses, diodes, and remote switching devices (remote power controllers, hybrid circuit drivers, and relays). The power controller assemblies and load controller assemblies distribute dc power to all the system loads using remote switching devices.

The EPD&C provides power to the following hydraulic components.

- o Heaters
- o Circulation Pumps
- o Main Pump Depress Solenoid
- o Landing Gear Retract/Circ. Valve
- o MPS/TVC Isolation Valve
- o Landing Gear Isolation Valve
- o Orbiter/ET Umbilical Actuators
- o Temperature and Pressure Transducers

### 3.2 Interfaces and Locations

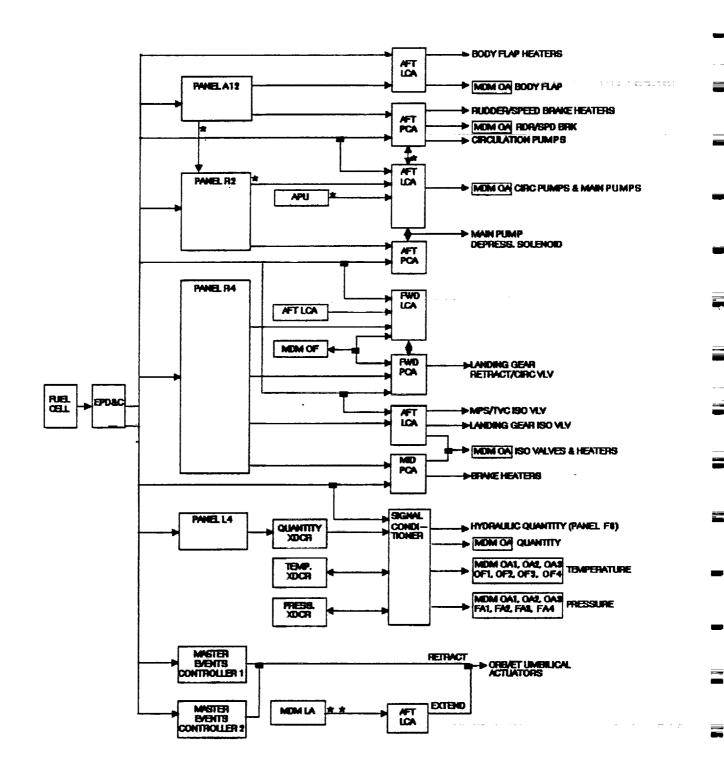
The locations of the hydraulics and water spray boiler components on the Orbiter are shown in Figure 5.

The hydraulics system interfaces with and provides power to the aerosurface controls (elevons, rudder/speedbrake, and body flap), ET umbilical actuators (LH2 and LO2), SSME thrust vector control actuators, SSME control valves, landing gear retract and deploy actuators, main wheel brakes and antiskid control, and nosewheel steering.

The water spray boiler interfaces with the hydraulics system and the APU to provide cooling for the hydraulic fluid and APU lube oil. In addition to this cooling interface, the hydraulics system interfaces with the environmental control and life support system to absorb heat from the Freon heat exchanger.

Both the hydraulics system and the water spray boiler interface with the EPD&C system, the Display and Control (D&C) system, the instrumentation system, and the GPC software. The EPD&C system provides the electric power and the control assemblies for motors and valves. The D&C system provides the capability for the crew to monitor, configure or manually control the systems where necessary. The instrumentation system processes the performance parameters required for system monitoring and control. The GPC software provides automatic control for hydraulic fluid thermal

### EPD&C - HYDRAULICS DIAGRAM



<sup>\*</sup> AFFECTS CIRCULATION PUMP.

Figure 4 - EPD&C - HYDRAULICS DIAGRAM

MDM US USED FOR PRE-FLIGHT OPERATIONS.

# HYDRAULICS AND WATER SPRAY BOILER COMPONENT LOCATIONS

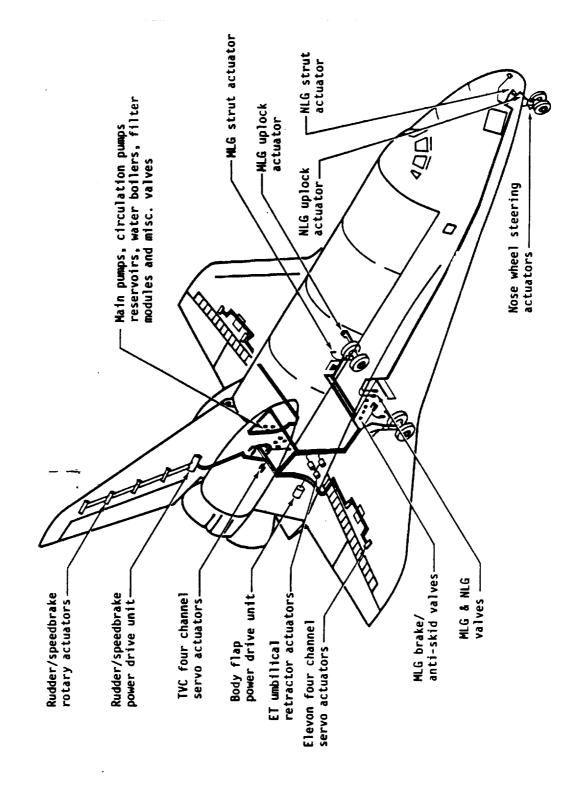


Figure 5 - HYDRAULICS AND WATER SPRAY BOILER COMPONENT LOCATIONS

conditioning, accumulator pressure maintenance and landing gear isolation valve positioning. It also provides priority rate limiting which automatically manages loads on the remaining hydraulic systems or system if one or two hydraulic systems are lost for ascent or entry.

### 3.3 Hierarchy

Figure 6 illustrates the hierarchy of the HYD/WSB hardware and the corresponding components used for purposes of analysis. Figures 7 through 25 comprise the detailed system representations.

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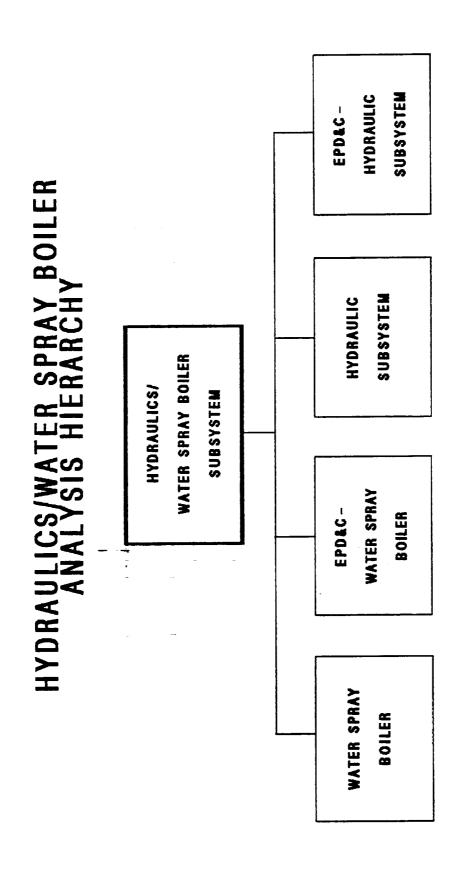


Figure 6 - HYDRAULICS/WATER SPRAY BOILER ANALYSIS HIERARCHY

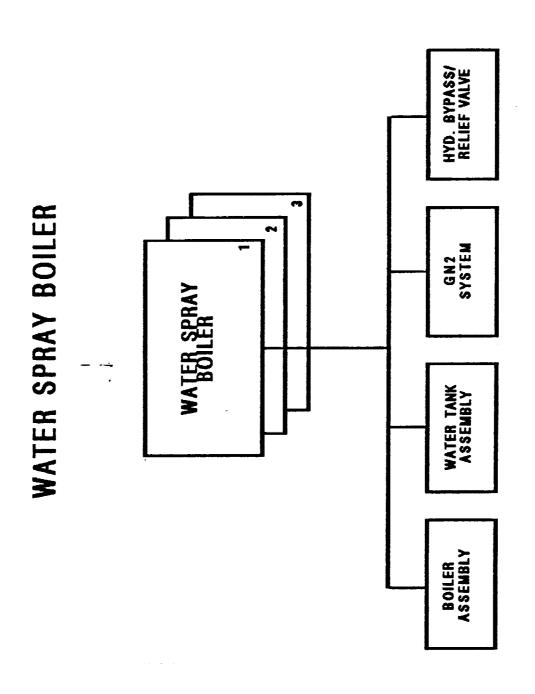


Figure 7 - WATER SPRAY BOILER

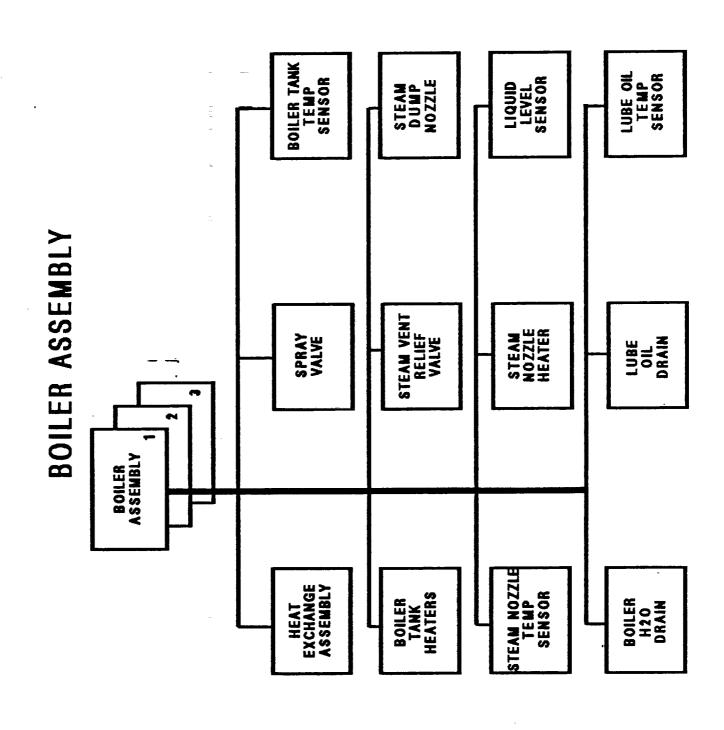


Figure 8 - BOILER ASSEMBLY

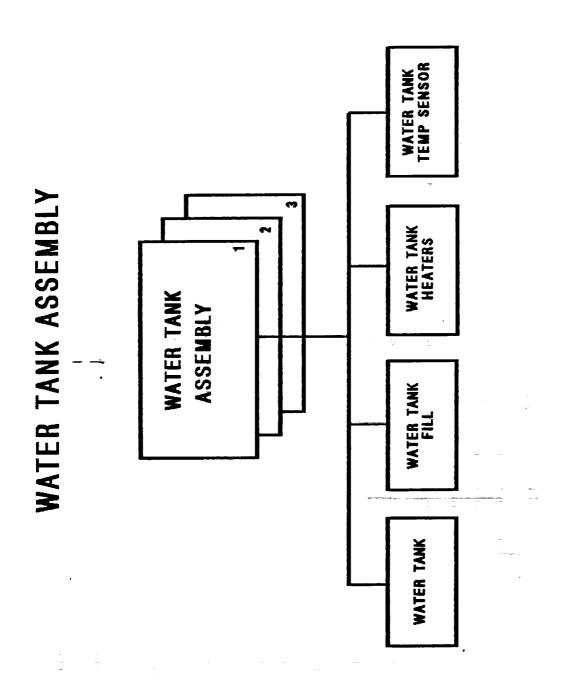


Figure 9 - WATER TANK ASSEMBLY

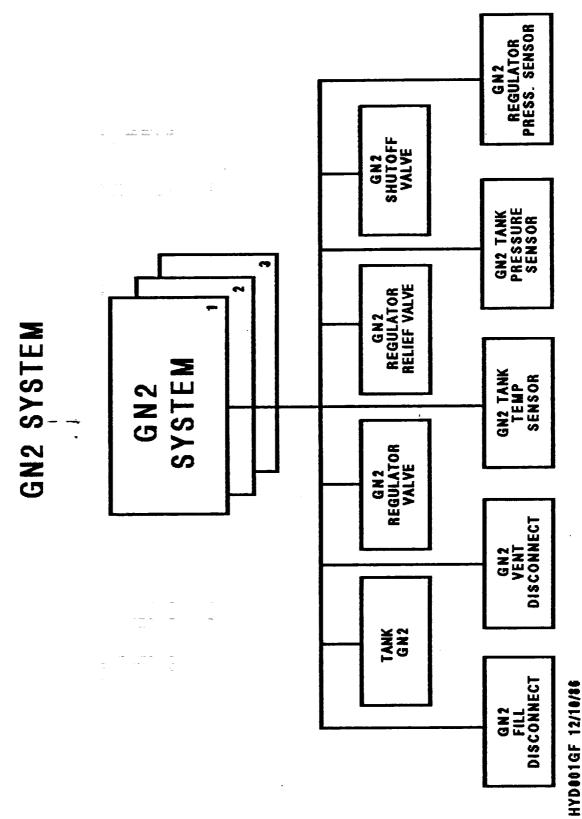


Figure 10 - GN2 SYSTEM

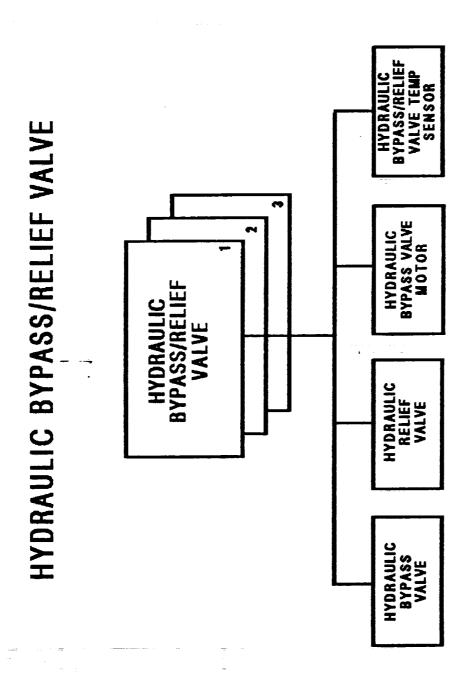


Figure 11 - HYDRAULIC BYPASS/RELIEF VALVE

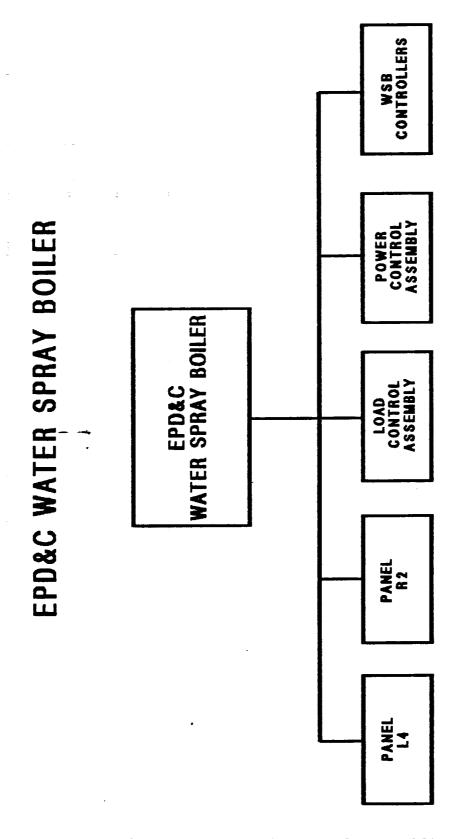


Figure 12 - EPD&C WATER SPRAY BOILER

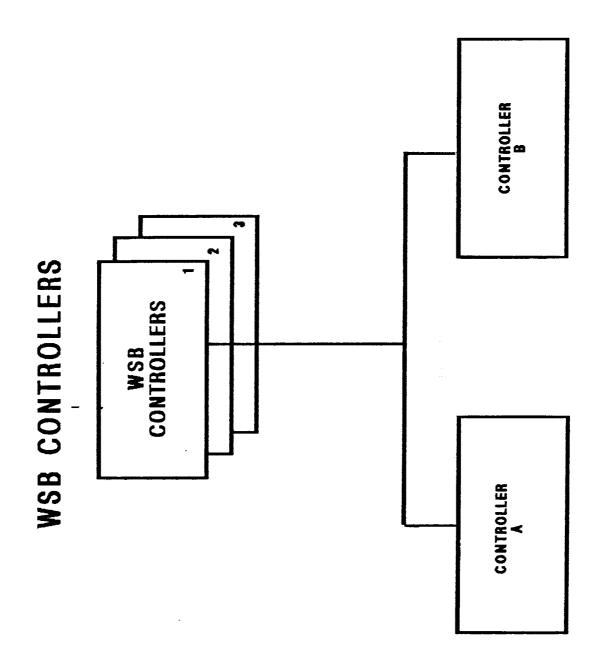


Figure 13 - WSB CONTROLLERS

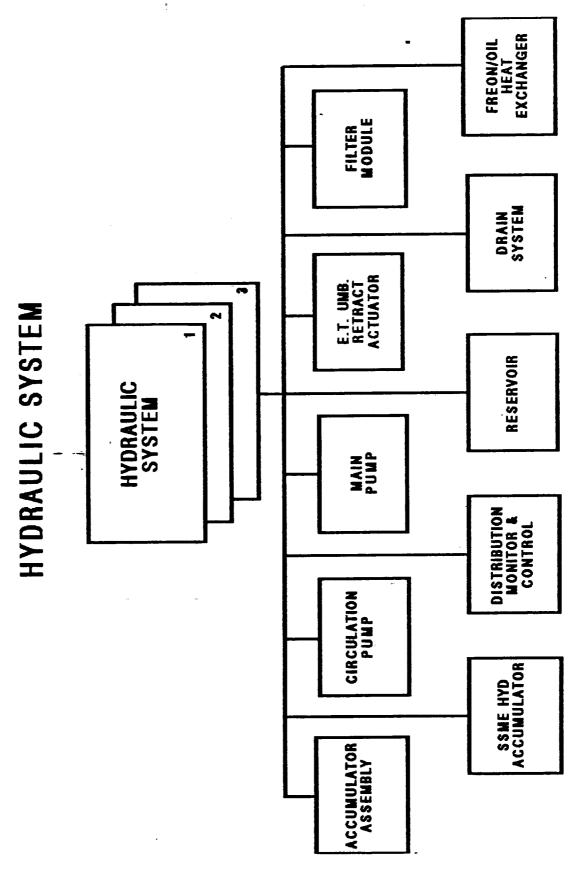


Figure 14 - HYDRAULIC SYSTEM

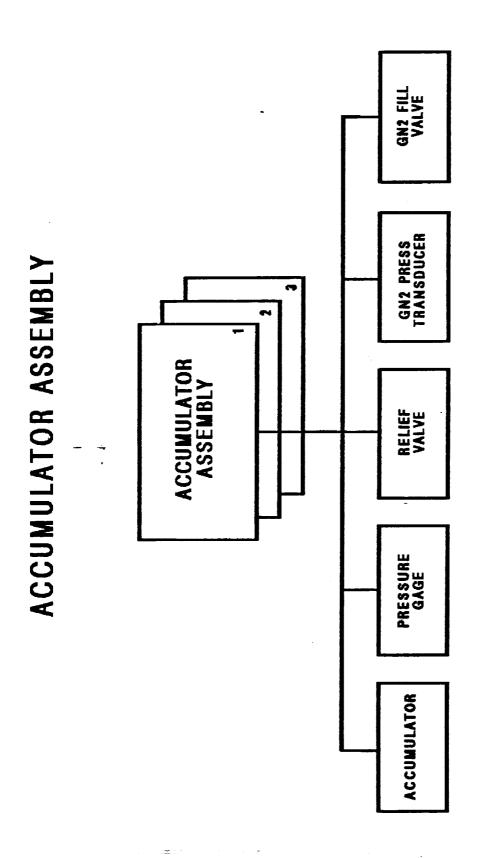


Figure 15 - ACCUMULATOR ASSEMBLY

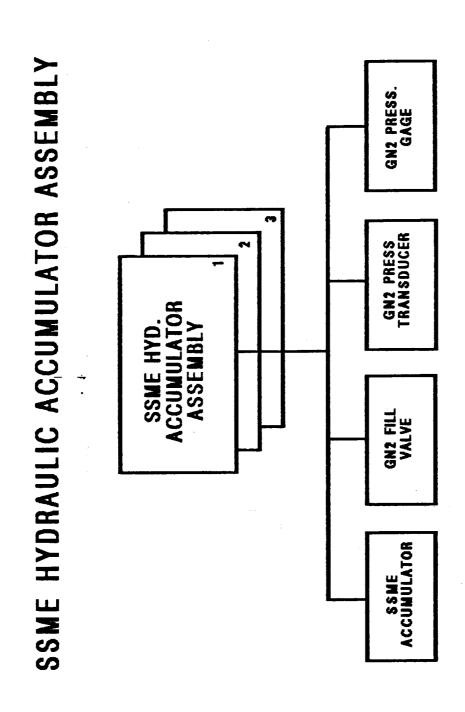


Figure 16 - SSME HYDRAULIC ACCUMULATOR ASSEMBLY

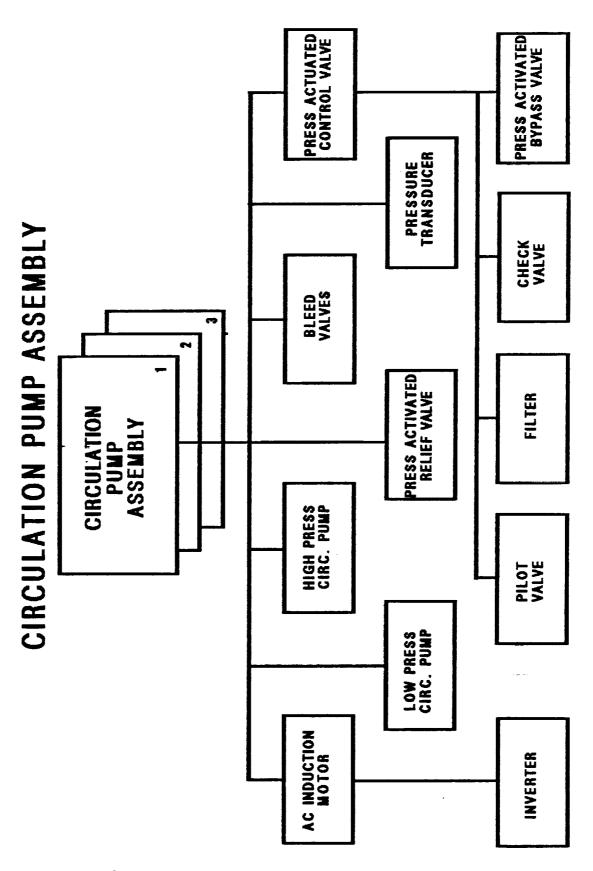


Figure 17 - CIRCULATION PUMP ASSEMBLY

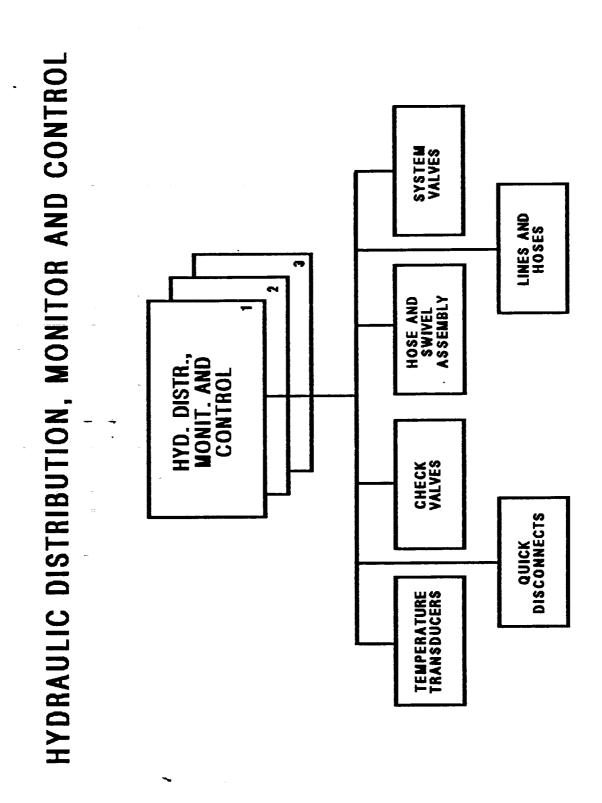


Figure 18 - HYDRAULIC DISTRIBUTION, MONITOR AND CONTROL

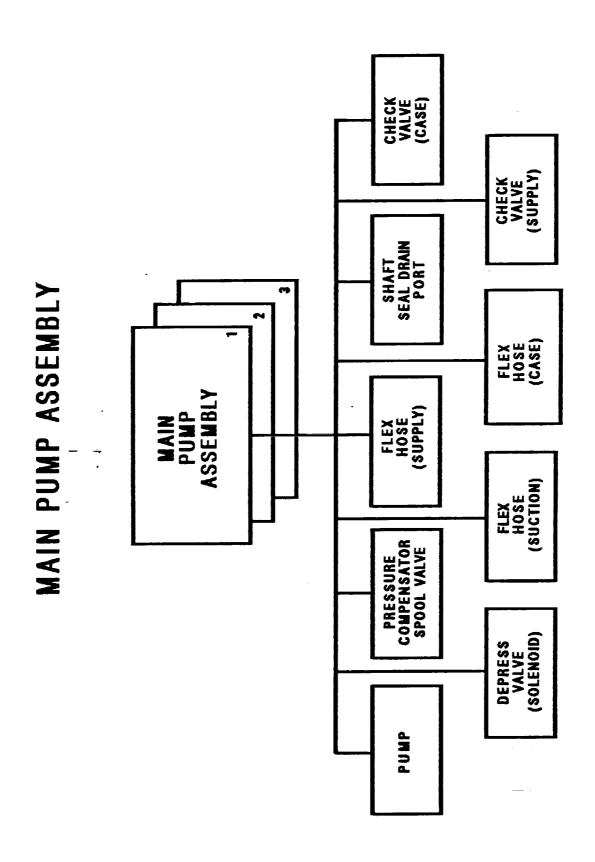


Figure 19 - MAIN PUMP ASSEMBLY

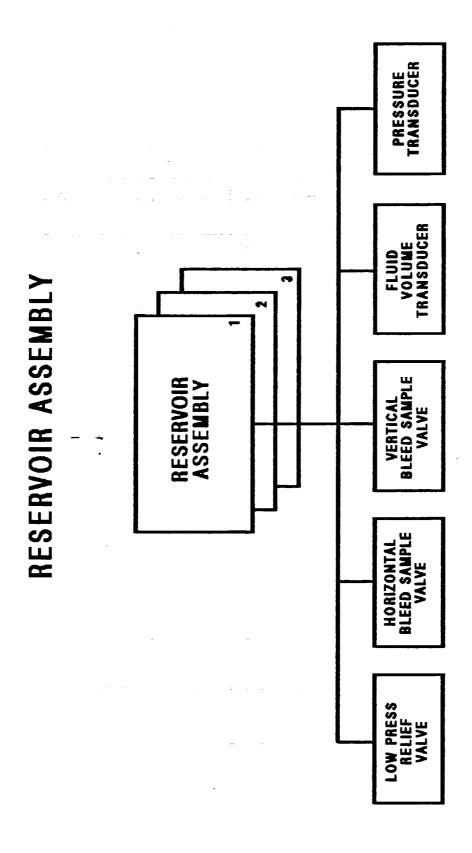


Figure 20 - RESERVOIR ASSEMBLY

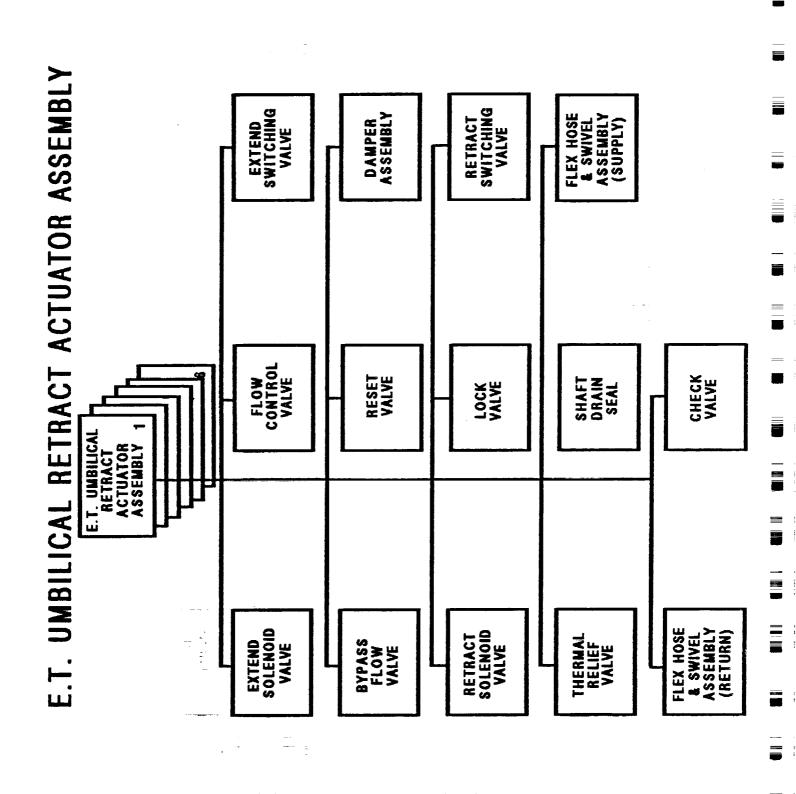


Figure 21 - ET. UMBILICAL RETRACT ACTUATOR ASSEMBLY

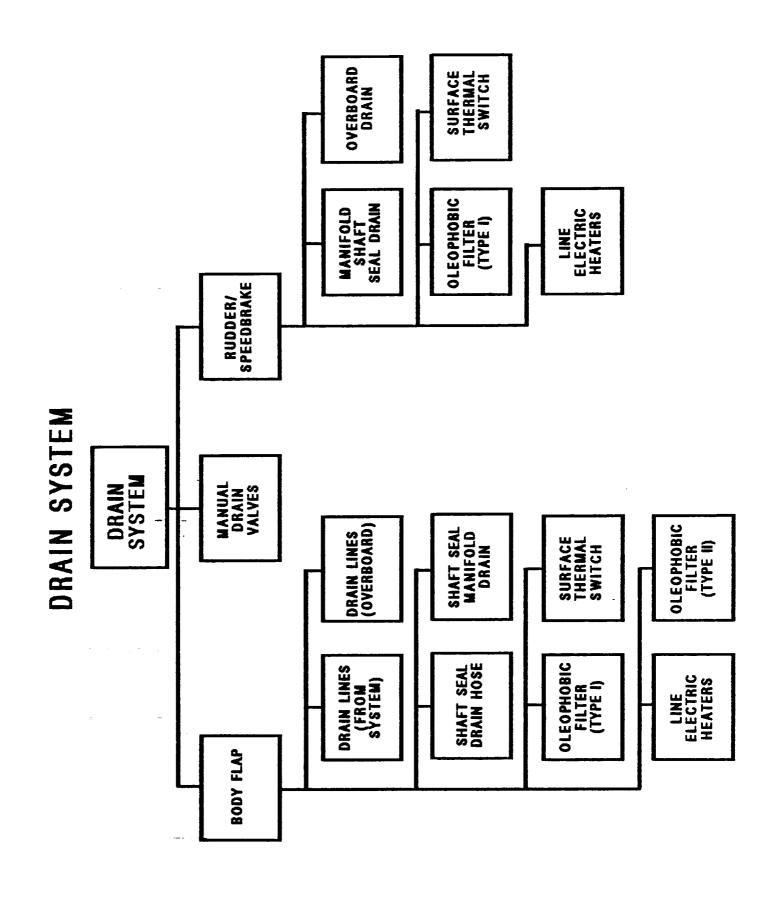


Figure 22 - DRAIN SYSTEM

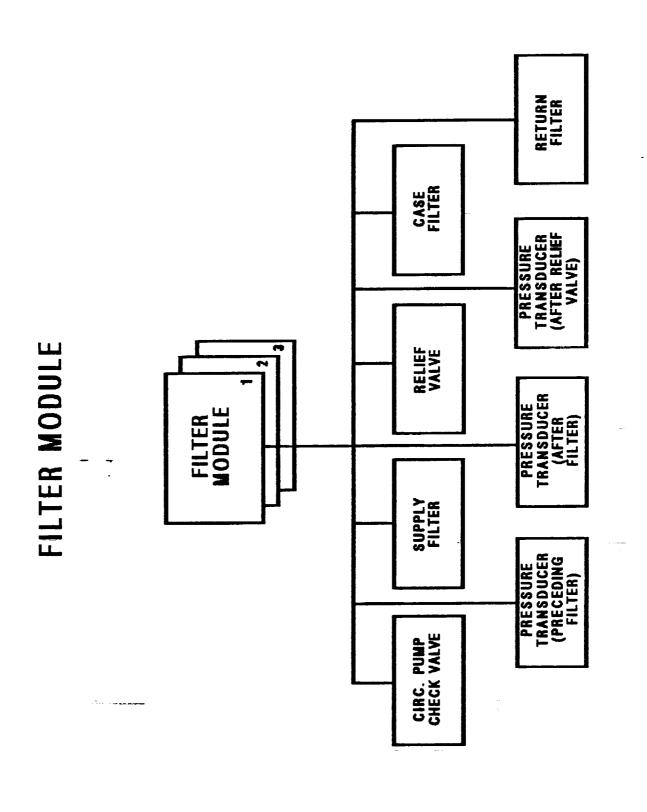


Figure 23 - FILTER MODULE

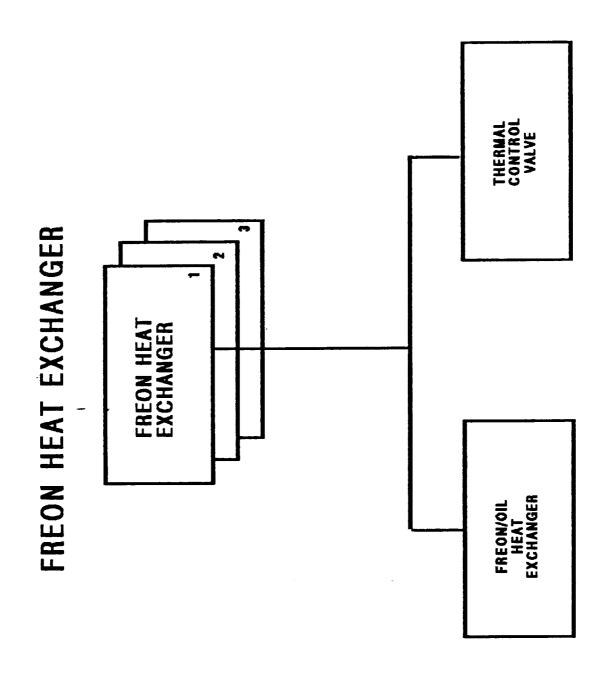


Figure 24 - FREON HEAT EXCHANGER

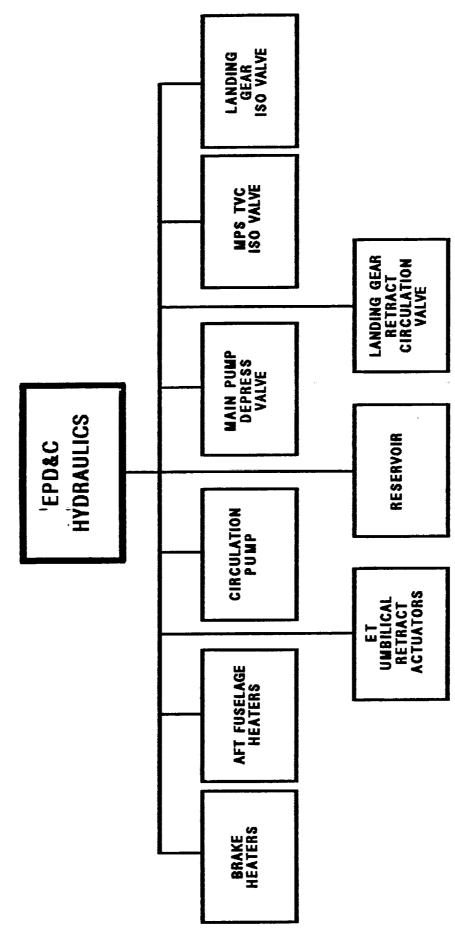


Figure 25 - EPD&C HYDRAULICS

#### 4.0 ASSESSMENT RESULTS

The IOA analysis of the HYD/WSB hardware initially generated 430 failure mode worksheets and identified 166 Potential Critical Items (PCIs) before starting the assessment process. In order to facilitate comparison, 46 additional failure mode analysis worksheets were generated. These analysis results were compared to the proposed NASA Post 51-L baseline of 364 FMEAs (References 11, 12, and 13 as modified by References 14, 15, and 16) and 111 CIL items (References 17, 18, 19, and 20). Most of the discrepancy between the number of IOA and NASA FMEAs can be explained by the different approach used by NASA and IOA to group failure modes. Upon completion of the assessment, 320 of 447 FMEAs were in agreement. Of the 127 that remained, 59 had minor discrepancies that did not affect criticality.

A summary of the quantity of NASA FMEAs assessed, versus the recommended IOA baseline, and any issues identified is presented in Table I.

Table I Su	mmary of I	DA FMEA Ass	essment
Component	NASA	IOA	Issues
WSB EPD&C - WSB HYD EPD&C - HYD	70 93 84 117	89 32 179 147	13 2 33 20
TOTAL	364	447	68

A summary of the quantity of NASA CIL items assessed, versus the recommended IOA baseline, and any issues identified is presented in Table II.

Table II	Summary of 1	IOA CIL Ass	sessment
Component	NASA	IOA	Issues
WSB EPD&C - WSB HYD EPD&C - HYD	38 4 48 21	46 5 107 25	4 2 11 6
TOTAL	111	183	23

Appendix C presents the detailed assessment worksheets for each failure mode identified and assessed. Appendix D highlights the NASA Critical Items and corresponding IOA worksheet ID. Appendix E contains IOA analysis worksheets supplementing previous analysis results reported in Space Transportation System Engineering and Operations Support (STSEOS) Working Paper No. 1.0-WP-VA86001-20, Analysis of the HYD/WSB, 15 December 1986. Appendix F provides a cross reference between the NASA FMEA and corresponding IOA worksheet(s). IOA recommendations are also summarized.

Table III presents a summary of the IOA recommended failure criticalities for the Post 51-L FMEA baseline. Further discussion of each of these subdivisions and the applicable issues is provided in subsequent paragraphs.

TABLE III Summary of IOA Recommended Failure Criticalities							
Criticality:	1/1	2/1R	2/2	3/1R	3/2R	3/3	TOTAL
WSB EPD&C - WSB HYD EPD&C - HYD	1 0 5 0	40 4 90 12	0 0 0 0	27 14 25 37	1 0 1 0	21 12 58 99	89 30 179 147
TOTAL	6	146	0	103	2	190	447

Of the failure modes analyzed, 183 were determined to be critical items. A summary of the IOA recommended critical items is presented in Table IV.

TABLE IV	Summary	of IO	A Recor	nmended	Critica	al Iter	ns
Criticality:	1/1	2/1R	2/2	3/1R	3/2R	3/3	TOTAL
WSB EPD&C - WSB HYD EPD&C - HYD	1 0 5 0	40 4 90 12	0 0 0 0	4 1 11 13	1 0 1 0	0 0 0 0	46 5 107 25
TOTAL	6	146	0	29	2	0	183

The scheme for assigning IOA assessment (Appendix C) and analysis (Appendix E) worksheet numbers is shown in Table V.

Ťal	ole V IOA Worksheet Numbers
Component	IOA ID Number (First Three Digits)
WSB EPD&C - WSB HYD EPD&C - HYD	101 Through 174 (e.g., includes 1171) 175 Through 197 401 Through 731 800 Through 950

## 4.1 Assessment Results - Water Spray Boiler

The assessment between the IOA failure modes and the Post 51-L NASA FMEA baseline, as defined above, identified 13 WSB issues, of which four were CIL issues. Seven of these issues relate to the addition of new FMEAs, two of which would be CIL items. Two issues relate to lowering the criticality of a NASA FMEA, one of which would delete the FMEA from the CIL. Four issues relate to redundancy screen changes, one of which would delete the FMEA from the CIL.

### 4.2 Assessment Results - EPD&C - Water Spray Boiler

The assessment identified two EPD&C - WSB issues, both of which are CIL issues. One issue related to creating a new FMEA which would be a CIL item. The other relates to deleting a FMEA from the CIL.

#### 4.3 Assessment Results - Hydraulic System

The assessment identified 33 HYD issues, 11 of which are CIL issues. Three of these issues relate to raising the criticality of NASA FMEAs. Twenty-six issues relate to creating new FMEAs, 9 of which would be CIL items. Four issues relate to lowering the criticality of NASA FMEAs, 2 of which would delete the FMEA from the CIL.

#### 4.4 Assessment Results - EPD&C - Hydraulics

The assessment identified 21 EPD&C-HYD issues, 6 of which were CIL issues. Six of these issues relate to raising the criticality of NASA FMEAS. Two issues relate to creating new FMEAS. Ten issues relate to lowering the criticality of NASA FMEAS, 3 of which would delete the FMEA from the CIL. One issue relates to removing a NASA FMEA from the CIL because it does not meet the CIL criteria. One issue relates to changing a redundancy screen which would add the FMEA to the CIL. One issue relates to adding a new FMEA to the CIL.

#### 5.0 REFERENCES

Reference documentation available from NASA and Rockwell was used in the analysis. The documentation used included the following:

- 1. JSC-18341, Mechanical Systems Console Handbook Volume II Systems Briefs, Rev. A PCN-3, 2-7-86
- VS70-958109, Integrated System Schematic Hydraulics, Rev. E
- 3. VS70-958099, Integrated System Schematic Hydraulics, Rev. A, 4-22-82
- 4. VS70-580996, Schematic-Hydraulic Subsystem, Rev. A, 5-30-85
- 5. VS70-580999, Schematic-Hydraulic Subsystem, Rev. B, 12-17-84
- 6. JSC-12770, Shuttle Flight Operations Manual, Volume 9, Auxiliary Power Unit/Hydraulics, Basic, 3-16-81
- 7. JSC 12820, STS Operational Flight Rules, Final PCN-3, 6-28-85
- 8. JSC 11174, Space Shuttle Systems Handbook, Rev. C PCN-5, 9-13-85
- 9. NSTS 22206, Instructions for Preparation of Failure Modes and Effects Analysis (FMEA) and Critical Items List (CIL), 10-10-86
- 10. V58 File III, Orbiter Operations and Maintenance Requirements and Specification Document - Hydraulic Subsystem, 12-16-85
- 11. STS-82-0021, Orbiter Vehicle Operational Configuration Failure Mode Effects Analysis-Hydraulic Subsyste, 1 March 1982.
- 12. STS-82-0037, Orbiter Vehicle Operational Configuration Failure Mode Effects Analysis-Active Thermal Control and Water Spray Boiler, Change #2, 28 January 1983.
- 13. STS-82-0033, Orbiter Vehicle Operational Configuration Failure Mode Effects Analysis-Electrical Power Distribution and Control, Change #2, 28 January 1983.
- 14. NASA-JSC FMEA and CIL Review Comments for the Hydraulics and Hydraulics EPD&C, 5 March 1986, as redlined.
- 15. NASA-JSC FMEA and CIL Review Comments for the Water Spray Boiler, 6 January 1986, as redlines.

- 16. NASA-JSC FMEA and CIL Review Comments for the Water Spray Boiler EPD&C, 2 March 1986, as redlined.
- 17. RI document 87MA4689, Revised Orbiter Critical Items List (Hydraulics EPD&C), 8 dECEMBER 1987.
- 18. RI document 87MA4944, Revised Orbiter critical Items List (Hydraulics), 22 December 1987.
- 19. RI document 88MA0161, Revised Orbiter Critical Items List (Water Spray Boiler), 9 January 1988.
- 20. RI document 87MA4731, Revised Orbiter Critical Items List (Water Spray Boiler EPD&C), 8 December 1987.

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## APPENDIX A ACRONYMS

- Alternating Current AC - Abort Once Around AOA - Auxiliary Power Unit APU - Assembly ASSY ATO - Abort to Orbit BFS - Backup Flight System CIL - Critical Items List CIRC - Circulation CNTL Control - Criticality CRIT CRT - Cathode Ray Tube C&W - Caution and Warning System DC - Direct Current DISTR - Distribution - Data Processing System DPS DU - Display Unit EPD&C - Electrical Power Distribution and Control  $\mathbf{ET}$  External Tank F - Functional - Flight Aft FA FF - Flight Forward - Failure Mode FM - Failure Mode and Effects Analysis **FMEA** - Government Furnished Equipment GFE GN2 - Gaseous Nitrogen - General Purpose Computer GPC GPM Gallons Per Minute GSE - Ground Support Equipment HW Hardware HYD - Hydraulics - Water H20 - Independent Orbiter Assessment IOA JSC - Johnson Space Center LCA - Load Control Assembly - Liquid Hydrogen LH2 - Liquid Oxygen LO2 MDAC - McDonnell Douglas Astronautics Company MDM Multiplexer/Demultiplexer MEC Main Engine Controler - Main MN TINOM Monitoring MPS Main Propulsion System - Not Applicable NA - National Aeronautics and Space Administration NASA NSTS National Space Transportation System - Operational Maintenance Requirements and OMRSD Specifications Document

## ACRONYMS

PBI	- Push Button Indicator
PCA	<ul> <li>Power Control Assembly</li> </ul>
PCI	<ul> <li>Potential Critical Item</li> </ul>
PSI	- Pounds Per Square Inch
RI	- Rockwell International
RM	<ul> <li>Redundancy Management</li> </ul>
RPC	- Remote Power Controller
RTLS	- Return to Launch Site
SM	- Systems Management
SRB	- Solid Rocket Booster
SSME	- Space Shuttle Main Engine
STS	- Space Transportation System
SW	- Software
TAL	- Transatlantic Abort Landing
TD	- Touch Down
TVC	- Thrust Vector Control
WSB	- Water Spray Boiler

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#### APPENDIX B

## DEFINITIONS, GROUND RULES, AND ASSUMPTIONS

- B.1 Definitions
- B.2 Project Level Ground Rules and AssumptionsB.3 Subsystem-Specific Ground Rules and Assumptions

## APPENDIX B DEFINITIONS, GROUND RULES, AND ASSUMPTIONS

#### B.1 Definitions

Definitions contained in <u>NSTS 22206</u>, <u>Instructions For Preparation of FMEA/CIL</u>, <u>10 October 1986</u>, were used with the following amplifications and additions.

#### INTACT ABORT DEFINITIONS:

RTLS - begins at transition to OPS 6 and ends at transition
to OPS 9, post-flight

TAL - begins at declaration of the abort and ends at transition to OPS 9, post-flight

AOA - begins at declaration of the abort and ends at transition to OPS 9, post-flight

ATO - begins at declaration of the abort and ends at transition to OPS 9, post-flight

<u>CREDIBLE (CAUSE)</u> - an event that can be predicted or expected in anticipated operational environmental conditions. Excludes an event where multiple failures must first occur to result in environmental extremes

<u>CONTINGENCY CREW PROCEDURES</u> - procedures that are utilized beyond the standard malfunction procedures, pocket checklists, and cue cards

<u>EARLY MISSION TERMINATION</u> - termination of onorbit phase prior to planned end of mission

EFFECTS/RATIONALE - description of the case which generated the highest criticality

HIGHEST CRITICALITY - the highest functional criticality
determined in the phase-by-phase analysis

MAJOR MODE (MM) - major sub-mode of software operational sequence
(OPS)

MC - Memory Configuration of Primary Avionics Software System
(PASS)

MISSION - assigned performance of a specific Orbiter flight with payload/objective accomplishments including orbit phasing and altitude (excludes secondary payloads such as GAS cans, middeck P/L, etc.)

<u>MULTIPLE ORDER FAILURE</u> - describes the failure due to a single cause or event of all units which perform a necessary (critical) function

<u>OFF-NOMINAL CREW PROCEDURES</u> - procedures that are utilized beyond the standard malfunction procedures, pocket checklists, and cue cards

OPS - software operational sequence

PRIMARY MISSION OBJECTIVES - worst case primary mission objectives are equal to mission objectives

#### PHASE DEFINITIONS:

PRELAUNCH PHASE - begins at launch count-down Orbiter
power-up and ends at moding to OPS Major Mode 102 (liftoff)

<u>LIFTOFF MISSION PHASE</u> - begins at SRB ignition (MM 102) and ends at transition out of OPS 1 (Synonymous with ASCENT)

ONORBIT PHASE - begins at transition to OPS 2 or OPS 8 and ends at transition out of OPS 2 or OPS 8

<u>DEORBIT PHASE</u> - begins at transition to OPS Major Mode 301 and ends at first main landing gear touchdown

<u>LANDING/SAFING PHASE</u> - begins at first main gear touchdown and ends with the completion of post-landing safing operations

# APPENDIX B DEFINITIONS, GROUND RULES, AND ASSUMPTIONS

B.2 IOA Project Level Ground Rules and Assumptions

The philosophy embodied in NSTS 22206, Instructions for Preparation of FMEA/CIL, 10 October 1986, was employed with the following amplifications and additions.

1. The operational flight software is an accurate implementation of the Flight System Software Requirements (FSSRs).

RATIONALE: Software verification is out-of-scope of this task.

2. After liftoff, any parameter which is monitored by system management (SM) or which drives any part of the Caution and Warning System (C&W) will support passage of Redundancy Screen B for its corresponding hardware item.

RATIONALE: Analysis of on-board parameter availability and/or the actual monitoring by the crew is beyond the scope of this task.

3. Any data employed with flight software is assumed to be functional for the specific vehicle and specific mission being flown.

RATIONALE: Mission data verification is out-of-scope of this task.

4. All hardware (including firmware) is manufactured and assembled to the design specifications/drawings.

RATIONALE: Acceptance and verification testing is designed to detect and identify problems before the item is approved for use.

5. All Flight Data File crew procedures will be assumed performed as written, and will not include human error in their performance.

RATIONALE: Failures caused by human operational error are out-of-scope of this task.

6. All hardware analyses will, as a minimum, be performed at the level of analysis existent within NASA/Prime Contractor Orbiter FMEA/CILs, and will be permitted to go to greater hardware detail levels but not lesser.

RATIONALE: Comparison of IOA analysis results with other analyses requires that both analyses be performed to a comparable level of detail.

7. Verification that a telemetry parameter is actually monitored during AOS by ground-based personnel is not required.

RATIONALE: Analysis of mission-dependent telemetry availability and/or the actual monitoring of applicable data by ground-based personnel is beyond the scope of this task.

8. The determination of criticalities per phase is based on the worst case effect of a failure for the phase being analyzed. The failure can occur in the phase being analyzed or in any previous phase, whichever produces the worst case effects for the phase of interest.

RATIONALE: Assigning phase criticalities ensures a thorough and complete analysis.

9. Analysis of wire harnesses, cables, and electrical connectors to determine if FMEAs are warranted will not be performed nor FMEAs assessed.

RATIONALE: Analysis was substantially complete prior to NSTS 22206 ground rule redirection.

10. Analysis of welds or brazed joints that cannot be inspected will not be performed nor FMEAs assessed.

RATIONALE: Analysis was substantially complete prior to NSTS 22206 ground rule redirection.

11. Emergency system or hardware will include burst discs and will exclude the EMU Secondary Oxygen Pack (SOP), pressure relief valves and the landing gear pyrotechnics.

RATIONALE: Clarify definition of emergency systems to ensure consistency throughout IOA project.

# APPENDIX B DEFINITIONS, GROUND RULES, AND ASSUMPTIONS

B.3 HYD/WSB-Specific Ground Rules and Assumptions

The IOA analysis was performed to the component or assembly level of the HYD/WSB subsystem. The analysis considered the worst case effects of the hardware or functional failure on the subsystem, mission, and crew and vehicle safety.

 Where redundant systems perform non-identical functions (e.g. hydraulics systems 1 and 2), use worst case system.

RATIONALE: Need to identify worst case effect.

2. Pyro's for lowering landing gears are "unlike redundant" to hydraulic system 1.

RATIONALE: Pyro's are sufficient to lower the landing gear in absence of an interfering hydraulic system 1 failure.

3. In analysis cases where the meaning of hardware item redundancy seems ambiguous, redundancy is understood to mean that there is one or more systems that are redundant to the system in which the hardware item occurs.

RATIONALE: This is the most conservative assumption for purposes of determining criticality.

4. Loss of redundancy means loss of all capability to perform function.

RATIONALE: Maintain uniform usage within project.

 Caps and fittings for quick disconnects are considered one component.

RATIONALE: This is the most conservative assumption.

6. For purposes of criticality evaluations during aborts, assume SSME induced aborts.

RATIONALE: This is the most conservative assumption.

 Leaks (GN2, hydraulic fluid, water) are sufficiently prolonged in time to allow recognition and response.

RATIONALE: This assumption allows for non-trivial case analysis.

8. Contamination of all three hydraulic systems during turnaround servicing is not considered a "single credible event" in evaluating Redundancy Screen C.

RATIONALE: This is considered a ground operations problem although the significant number of inflight hydraulic system anomalies attributed to contamination suggests that it should be analyzed independently as a potential cause of critical failure modes. Without this assumption, all hydraulic failure modes that list contamination as a cause would fail screen C.

#### APPENDIX C DETAILED ASSESSMENT

This section contains the IOA assessment worksheets generated during the assessment of this subsystem. The information on these worksheets facilitates the comparison of the NASA FMEA/CIL (Pre and Post 51-L) to the IOA detailed analysis worksheets included in Appendix E. Each of these worksheets identifies the NASA FMEA being assessed, corresponding MDAC Analysis Worksheet ID (Appendix E), hardware item, criticality, redundancy screens, and recommendations. For each failure mode, the highest assessed hardware and functional criticality is compared and discrepancies noted as "N" in the compare row under the column where the discrepancy occurred.

## LEGEND FOR IOA ASSESSMENT WORKSHEETS

#### Hardware Criticalities:

- 1 = Loss of life or vehicle
- 2 = Loss of mission or next failure of any redundant item
   (like or unlike) could cause loss of life/vehicle
- 3 = All others

#### Functional Criticalities:

- 1R = Redundant hardware items (like or unlike) all of which,
   if failed, could cause loss of life or vehicle
- 2R = Redundant hardware items (like or unlike) all of which,
   if failed, could cause loss of mission

## Redundancy Screens A, B and C:

P = Passed Screen

F = Failed Screen

NA = Not Applicable

#### NASA Data:

Baseline = NASA FMEA/CIL

New = Baseline with Proposed Post 51-L Changes

#### CIL Item :

X = Included in CIL

### Compare Row:

N = Non compare for that column (deviation)

SUBSYSTEM: HYD/WSB MDAC ID: 101 ITEM: WATER SPRAY BOILER ASSEMBLY  LEAD ANALYST: J. DUVAL  ASSESSMENT:  CRITICALITY REDUNDANCY SCREENS CIL FLIGHT ITEM HDW/FUNC A B C  NASA [ 2 /1R ] [ P ] [ P ] [ P ] [ X ] * IOA [ 2 /1R ] [ P ] [ P ] [ P ] [ X ]  COMPARE [ / ] [ ] [ ] [ ] [ ]  RECOMMENDATIONS: (If different from NASA)  [ / ] [ ] [ ] [ ] [ ] [ ]  * CIL RETENTION RATIONALE: (If applicable) REMARKS:		ASSESSMENT DATE: ASSESSMENT ID: NASA FMEA #:	1/08/87 HYDWSB-10 06-3A-060		NASA DAT BASELIN NI				
ASSESSMENT:  CRITICALITY REDUNDANCY SCREENS CIL ITEM HDW/FUNC A B C  NASA [ 2 /1R ] [ P ] [ P ] [ P ] [ X ] * IOA [ 2 /1R ] [ P ] [ P ] [ P ] [ X ]  COMPARE [ / ] [ ] [ ] [ ] [ ] [ ] [ ]   RECOMMENDATIONS: (If different from NASA)  [ / ] [ ] [ ] [ ] [ ] [ ] (ADD/DELETE)  * CIL RETENTION RATIONALE: (If applicable)  ADEQUATE [ X ] INADEQUATE [ X ]		MDAC ID:	101	RAY BOILER	ASSEMBLY				
CRITICALITY REDUNDANCY SCREENS CIL ITEM HDW/FUNC A B C  NASA [ 2 /1R ] [ P ] [ P ] [ P ] [ X ] * IOA [ 2 /1R ] [ P ] [ P ] [ P ] [ X ] * IOA [ 2 /1R ] [ P ] [ P ] [ P ] [ X ] * IOA [ 2 /1R ] [ P ] [ P ] [ P ] [ Y ] [ Y ] [ Y ] [ Y ] [ Y ] [ Y ] [ Y ] [ Y ] [ Y ] [ Y ] [ Y ] [ Y ] [ Y ] [ Y ] [ Y ] [ Y ] [ Y ] [ Y ] [ Y ] [ Y ] [ Y ] [ Y ] [ Y ] [ Y ] [ Y ] [ Y ] [ Y ] [ Y ] [ Y ] [ Y ] [ Y ] [ Y ] [ Y ] [ Y ] [ Y ] [ Y ] [ Y ] [ Y ] [ Y ] [ Y ] [ Y ] [ Y ] [ Y ] [ Y ] [ Y ] [ Y ] [ Y ] [ Y ] [ Y ] [ Y ] [ Y ] [ Y ] [ Y ] [ Y ] [ Y ] [ Y ] [ Y ] [ Y ] [ Y ] [ Y ] [ Y ] [ Y ] [ Y ] [ Y ] [ Y ] [ Y ] [ Y ] [ Y ] [ Y ] [ Y ] [ Y ] [ Y ] [ Y ] [ Y ] [ Y ] [ Y ] [ Y ] [ Y ] [ Y ] [ Y ] [ Y ] [ Y ] [ Y ] [ Y ] [ Y ] [ Y ] [ Y ] [ Y ] [ Y ] [ Y ] [ Y ] [ Y ] [ Y ] [ Y ] [ Y ] [ Y ] [ Y ] [ Y ] [ Y ] [ Y ] [ Y ] [ Y ] [ Y ] [ Y ] [ Y ] [ Y ] [ Y ] [ Y ] [ Y ] [ Y ] [ Y ] [ Y ] [ Y ] [ Y ] [ Y ] [ Y ] [ Y ] [ Y ] [ Y ] [ Y ] [ Y ] [ Y ] [ Y ] [ Y ] [ Y ] [ Y ] [ Y ] [ Y ] [ Y ] [ Y ] [ Y ] [ Y ] [ Y ] [ Y ] [ Y ] [ Y ] [ Y ] [ Y ] [ Y ] [ Y ] [ Y ] [ Y ] [ Y ] [ Y ] [ Y ] [ Y ] [ Y ] [ Y ] [ Y ] [ Y ] [ Y ] [ Y ] [ Y ] [ Y ] [ Y ] [ Y ] [ Y ] [ Y ] [ Y ] [ Y ] [ Y ] [ Y ] [ Y ] [ Y ] [ Y ] [ Y ] [ Y ] [ Y ] [ Y ] [ Y ] [ Y ] [ Y ] [ Y ] [ Y ] [ Y ] [ Y ] [ Y ] [ Y ] [ Y ] [ Y ] [ Y ] [ Y ] [ Y ] [ Y ] [ Y ] [ Y ] [ Y ] [ Y ] [ Y ] [ Y ] [ Y ] [ Y ] [ Y ] [ Y ] [ Y ] [ Y ] [ Y ] [ Y ] [ Y ] [ Y ] [ Y ] [ Y ] [ Y ] [ Y ] [ Y ] [ Y ] [ Y ] [ Y ] [ Y ] [ Y ] [ Y ] [ Y ] [ Y ] [ Y ] [ Y ] [ Y ] [ Y ] [ Y ] [ Y ] [ Y ] [ Y ] [ Y ] [ Y ] [ Y ] [ Y ] [ Y ] [ Y ] [ Y ] [ Y ] [ Y ] [ Y ] [ Y ] [ Y ] [ Y ] [ Y ] [ Y ] [ Y ] [ Y ] [ Y ] [ Y ] [ Y ] [ Y ] [ Y ] [ Y ] [ Y ] [ Y ] [ Y ] [ Y ] [ Y ] [ Y ] [ Y ] [ Y ] [ Y ] [ Y ] [ Y ] [ Y ] [ Y ] [ Y ] [ Y ] [ Y ] [ Y ] [ Y ] [ Y ] [ Y ] [ Y ] [ Y ] [ Y ] [ Y ] [ Y ] [ Y ] [ Y ] [ Y ] [ Y ] [ Y ] [ Y ] [ Y ] [ Y ] [ Y ] [ Y ] [ Y ] [ Y ] [ Y ] [ Y ] [ Y ] [ Y ] [ Y ] [ Y ] [ Y ] [ Y ] [ Y ] [ Y ] [ Y ] [ Y ] [ Y ] [ Y ] [ Y ] [ Y ] [ Y ] [ Y ] [ Y ] [ Y ] [ Y ] [ Y ] [ Y ] [ Y ] [ Y ] [		LEAD ANALYST:	J. DUVAL						
FLIGHT HDW/FUNC A B C  NASA [ 2 /1R ] [ P ] [ P ] [ P ] [ X ] * IOA [ 2 /1R ] [ P ] [ P ] [ P ] [ X ]  COMPARE [ / ] [ ] [ ] [ ] [ ]  RECOMMENDATIONS: (If different from NASA)  [ / ] [ ] [ ] [ ] [ ] [ ]  * CIL RETENTION RATIONALE: (If applicable)  ADEQUATE [ X ] INADEQUATE [ X ]		ASSESSMENT:							
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ASSESSMENT DATE: ASSESSMENT ID: NASA FMEA #:	HYDWSB-102 06-3A-0618			BASELINE NEW	[	]	
SUBSYSTEM: MDAC ID: ITEM:	HYD/WSB 102 WATER SPRA	Y BOILER	ASSEMBLY				
LEAD ANALYST:	J. DUVAL						
ASSESSMENT:							
CRITICAL FLIGH		DUNDANCY	SCREENS		CIL		
HDW/FU		В	С		IIE	11	
NASA [ 2 /1R IOA [ 2 /1R	] [ P ] [ P	] [ P ] [ P	] [ P ] [ P	]	[ X [ X	*	
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REMARKS:		•					

ASSESSMENT DATE: ASSESSMENT ID: NASA FMEA #:	HYDWSB-103	3		NASA DATA BASELINE NEW	
	HYD/WSB 103 LINES AND	FITTING	s (GN2-V	VATER)	
LEAD ANALYST:	J. DUVAL				
ASSESSMENT:					
	ITY RI	EDUNDANC	Y SCREEN	ıs	CIL ITEM
FLIGHT HDW/FUI		:	В	C	IIEM
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REMARKS: IOA CONCURS WITH ADDRESS WATER LEA INDEPENDENTLY.			WO FMEAS	ARE REQUI	RED TO

ASSESSMENT DATE: ASSESSMENT ID: NASA FMEA #:	1/08/87 HYDWSB-103A 06-3A-0619-1	A: E [ ] W [ X ]					
SUBSYSTEM: MDAC ID: ITEM:	HYD/WSB 103 LINES AND FITTI						
LEAD ANALYST:	J. DUVAL						
ASSESSMENT:							
CRITICAL FLIGH	r	NCY SCREENS	CIL ITEM				
HDW/FU	NC A	ВС					
NASA [ 2 /1R IOA [ 2 /1R	] [ P ] ] [ P ]	[ P ] [ P ] [ P ] [ P ]	[ X ] * [ X ]				
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REMARKS: IOA CONCURS WITH NASA COMMENTS. TWO FMEAS ARE REQUIRED TO ADDRESS WATER LEAKAGE (06-3-0618-1) AND GN2 LEAKAGE (06-3-0619-1) INDEPENDENTLY.							

ASSESSMENT DATE ASSESSMENT ID: NASA FMEA #:	HYDWSB-	104		BASELINE NEW		
SUBSYSTEM: MDAC ID: ITEM:	HYD/WSB 104 HEAT EX		ASSEMBLY		-	
LEAD ANALYST:	J. DUVĀ	L				
ASSESSMENT:						
CRITICA FLIG	<del></del>	REDUNDA	NCY SCREI	ens	CIL ITEM	
		A	В	<b>C</b>	·	
NASA [ 2 /1 IOA [ 2 /1	R ] [ R ] [	P ] P ]	[ P ] [ P ]	[ P ] [ P ]	[ X ] * [ X ]	
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REMARKS: IOA CONCURS WITH NASA. TWO FMEAS ARE REQUIRED TO ADDRESS LUBE OIL RESTRICTED FLOW (06-3A-0603-4) AND HYDRAULIC FLUID RESTRICTED FLOW (06-3A-0603-6).						

ASSESSMENT DATE: ASSESSMENT ID: NASA FMEA #:	HYDWSB-104A BASELINE [ ]						
	HYD/WSB 104 HEAT EXCHANGER ASSEMBLY						
LEAD ANALYST:	J. DUVAL						
ASSESSMENT:							
FLIGH'	LITY REDUNDANCY SCREENS CIL IT INC A B C						
NASA [ 2 /1R IOA [ 2 /1R	[ F ] [ F ] [ X ] * [ P ] [ P ] [ X ]						
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REMARKS: IOA CONCURS WITH NASA. TWO FMEAS ARE REQUIRED TO ADDRESS LUBE OIL RESTRICTED FLOW (06-3A-0603-4) AND HYDRAULIC FLUID RESTRICTED FLOW (06-3A-0603-6). IOA CONCURS WITH CIL REDUNDANCY SCREEN RATIONALE.							

ASSESSMENT DATE: ASSESSMENT ID: NASA FMEA #:	HYDWSB-105		A DATA: SELINE [ ] NEW [ X ]					
SUBSYSTEM: MDAC ID: ITEM:	HYD/WSB 105 HEAT EXCHANGER AS	SSY						
LEAD ANALYST:	J. DUVAL							
ASSESSMENT:								
		TY REDUNDANCY SCREENS						
FLIGH HDW/FU		A B C						
NASA [ 2 /1R IOA [ 2 /1R	] [ P ] [ ] [ P ]	P ] [ P ] P ]	[ X ] * [ X ]					
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* CIL RETENTION RATIONALE: (If applicable)  ADEQUATE [ X ]  INADEQUATE [ ]								
REMARKS: IOA CONCURS WITH NASA. TWO FMEAS ARE REQUIRED TO ADDRESS HYDRAULIC OIL LEAKAGE (06-3A-0602-3) AND LUBE OIL LEAKAGE (06-3A-0602-4).								

ASSESSME ASSESSME NASA FME	NT I	D:	HY	/08/87 YDWSB-105A 6-3A-0602-4					NASA DATA: BASELINE [ ] NEW [ X ]										
SUBSYSTE MDAC ID:	M:	•	10	5		CHA	NGEI	R A	SS	Ž.									
LEAD ANA	LYSI	P:	J.	סטס	/AI										•				
ASSESSME	NT:																		
CRITICALITY FLIGHT						RE	DUNI	DAN	CY	SCI	REEN	IS				CIL ITEM			
	_	W/FU		e A B						С									
NASA IOA	[ 2	2 /1R 2 /1R	]		[	P P	]	[ [	P P	] ]		P	]		[	X X	]	*	
COMPARE	[	/	]		[		]	[		]	i	•	]		[		]		
RECOMMEN	DAT	cons:		(If	đi	Lff	erei	nt	fr	om 1	NASA	<b>A</b> )							
	[	/	]		[		]	. [		]	ĺ	•	]	(A	] DD,	/DI	j ELI	ETE)	
* CIL RETENTION RATIONALE: (If applicable)  ADEQUATE [ X ]  INADEQUATE [ ]																			
REMARKS: IOA CONCURS WITH NASA. TWO FMEAS ARE REQUIRED TO ADDRESS HYDRAULIC OIL LEAKAGE (06-3A-0602-3) AND LUBE OIL LEAKAGE (06-3A-0602-4).																			

ASSESSMENT ASSESSMENT NASA FMEA	r II	<b>):</b>	HYDWSE									ASA I BASEI		[		]		
SUBSYSTEM: MDAC ID: ITEM:			HYD/WS 106 HEAT E		HA	NGER	Aŝ	SSY	ľ									
LEAD ANALYST: J. DUVAL																		
ASSESSMENT	r:																	
CI	TY REDUNDANCY SCR					SCRE	CREENS			CIL ITEM								
	HDW	/FUI	1C	2	A			В			С							
NASA (	[ 2 [ 2	/1R /1R	]	[ ]	P P	]	[	P P	]	]	P P	]		[	X X	]	*	
COMPARE	[	/	]	[		]	[		]	[		]		[		]		
RECOMMENDA	ATIC	ons:	(If	di:	ff	erent	<b>t</b> :	fro	om NA	SA	)							
l	[	/	]	[		]	[		]	[		]	(Al		'DE		TE)	
* CIL RETENTION RATIONALE: (If applicable)  ADEQUATE [ X ]  INADEQUATE [ ]																		
REMARKS: IOA CONCURS WITH NASA. TWO FMEAS ARE REQUIRED TO ADDRESS LUBE OIL INTERNAL LEAKAGE (06-3A-0603-2) AND HYDRAULIC OIL INTERNAL LEAKAGE (06-3A-0603-5).																		

ASSESSMENT DATE: ASSESSMENT ID: NASA FMEA #:	HYDWSB-	106A	NASA DATA: BASELINE [ ] NEW [ X ]						
	HYD/WSB 106 HEAT EXC	CHANGER							
LEAD ANALYST:	J. DUVA	L							
ASSESSMENT:									
CRITICAL		REDUNDA	ANCY SCRE	ENS	CIL ITEM				
FLIGH HDW/FU	NC	A	В	С	IIEM				
NASA [ 2 /1R IOA [ 2 /1R	] [	P ] P ]	[ P ] [ P ]	[ P ] [ P ]	[ X ] *				
COMPARE [ /	] [	]	[ ]	[ ]	[ ]				
RECOMMENDATIONS:	(If d	ifferent	from NA	SA)					
[ /	] [	1	[ ]	[ ]	[ ] ADD/DELETE)				
* CIL RETENTION	RATIONAL	E: (If a	applicabl	e) ADEQUATE INADEQUATE	[ X ]				
REMARKS: IOA CONCURS WITH NASA. TWO FMEAS ARE REQUIRED TO ADDRESS LUBE OIL INTERNAL LEAKAGE (06-3A-0603-2) AND HYDRAULIC OIL INTERNAL LEAKAGE (06-3A-0603-5).									

ASSESSMEI ASSESSMEI NASA FME	II TV		1/08/3 HYDWS 06-3A	B-10					NASA DAT BASELIN NE			x	]	
SUBSYSTEM MDAC ID:	M:		HYD/W: 107 HEAT		angei	R ASS	¥							
LEAD ANA	LYST	:	J. DU	VAL										
ASSESSME	T:													
•		ICALI LIGHT	Г	R: A		DANCY B	SCRE		С		CI IT	L	1	
NASA IOA	[ 2 [ 2	/1R /1R	]	[ P	]	[ P	]	[	P ] P ]		[	X X	]	*
COMPARE	[	/	J	[	]	[	]	[	]		[		]	
RECOMMENI	DATIC	ons:	(If	dif	ferer	nt fro	om NA	SA)						
	[	/	]	[	]	[	1	[	] (	AD	[ D/	DE	]	TE)
* CIL RE	rent)	ION I	RATION	ALE:	(If	appl:	icabl		ADEQUATE ADEQUATE		[	x	]	
REMARKS:						-			•					

	1/08/87 HYDWSB-108 06-3A-0609			BASELINE NEW		]		
SUBSYSTEM: MDAC ID: ITEM:	HYD/WSB 108 SPRAY VAL	VE (WATER	SUPPLY)					
LEAD ANALYST: J. DUVAL								
ASSESSMENT:								
CRITICAL: FLIGHT		EDUNDANCY	SCREENS	CIL ITEM				
HDW/FUI	NC A	В		C				
NASA [ 2 /1R IOA [ 2 /1R	] [ P ] [ P	] [ P ] [ P	] [	P ] P ]	[ X	] <b>*</b>		
COMPARE [ /	] [	] [	] [	]	[	]		
RECOMMENDATIONS:	(If dif	ferent fr	om NASA)	ı				
[ /	j (	] [	] [	] (Al	[ DD/DI	] ELETE		
* CIL RETENTION	RATIONALE:	(If appl		ADEQUATE NADEQUATE	[ X	]		
REMARKS:								

ASSESSMENT DATE: ASSESSMENT ID: NASA FMEA #:	HYDWSB-10									
SUBSYSTEM: MDAC ID: ITEM:	HYD/WSB 109 SPRAY VAI	JVE (WA	TER SUP	PLY)						
LEAD ANALYST:	J. DUVAL									
ASSESSMENT:										
CRITICAI FLIGH	IT	REDUNDA	CIL ITEM							
HDW/FU	INC A		В	С						
NASA [ 2 /1F IOA [ 2 /1F	? ] [ F	) ) ]	[ P ] [ P ]	[ P ] [ P ]	[ X ] * [ X ]					
COMPARE [ /	] [	]	[ ]	[ ]	[ ]					
RECOMMENDATIONS:	(If dif	ferent	from NA	ASA)						
[ /	] [	]	[ ]	[ ]	[ ] (ADD/DELETE)					
* CIL RETENTION	RATIONALE:	(If a	pplicabl	Le) ADEQUAT INADEQUAT	E [ X ]					
REMARKS:				~	• •					

	1/08/87 HYDWSB-1 06-3A-06				NASA DAT BASELII NI	
SUBSYSTEM: MDAC ID: ITEM:	HYD/WSB 109 SPRAY VA	LVE	(WATER	SUPPLY	Y)	
LEAD ANALYST:	J. DUVAL	•				
ASSESSMENT:						
CRITICAL: FLIGH HDW/FU	T		NDANCY B	SCREE	ns C	CIL ITEM
NASA [ 2 /1R IOA [ 2 /1R		P ] P ]	[ P [ P	]	[ P ] [ P ]	[ X ] * [ X ]
COMPARE [ /	] [	]	[	]	[ ]	[ ]
RECOMMENDATIONS:	(If di	ffer	ent fro	om NAS	A)	
[ /	J, [	]	[	]	[ ]	[ ] (ADD/DELETE)
* CIL RETENTION :	RATIONALE	: (I	f appli		) ADEQUATI INADEQUATI	

ASSESSMENT DATE: ASSESSMENT ID: NASA FMEA #:	1/08/87 HYDWSB-110	NASA DATA: BASELINE [ ] NEW [ X ]						
	HYD/WSB 110 SPRAY VALVE (WATER S	UPPLY)						
LEAD ANALYST:	J. DUVAL							
ASSESSMENT:		·						
CRITICALI FLIGHT	r	ITEM						
HDW/FUN	IC A B	<b>C</b> l <u>ugiu nere im</u> gi						
NASA [ 2 /1R IOA [ 3 /1R	] [ P ] [ P ] ] [ NA]	[P] [X]* [P] []						
COMPARE [ N /	] [ ] [ N ]	[ N ]						
RECOMMENDATIONS:	(If different from	NASA)						
[ 3 /1R	] [ ] [ NA]	[ ] [ D ] (ADD/DELETE)						
* CIL RETENTION RATIONALE: (If applicable)  ADEQUATE [ X ]  INADEQUATE [ ]								
INADEQUATE [ ] REMARKS: THIS FAILURE IS INCORPORATED AS A "CAUSE" IN FMEA 06-3A-0605-2 BUT HAS DIFFERENT CRITICALITY BECAUSE SWITCHING TO REDUNDANT CONTROLLER RESTORES NORMAL OPERATION. IOA RECOMMENDS A FMEA TO RECOGNIZE THIS FAILURE.								

ASSESSMENT DATE: ASSESSMENT ID: NASA FMEA #:	HYDWSB-111	HYDWSB-111 BASELINE								
SUBSYSTEM: MDAC ID: ITEM:	HYD/WSB 111 BOILER TANK TEM									
LEAD ANALYST:	J. DUVAL									
ASSESSMENT:										
FLIGH			CIL ITEM							
HDW/FU	NC A	ВС								
NASA [ 3 /1R IOA [ 3 /1R	] [ P ] ] [ P ]	[ P ] [ P ] [ NA] [ P ]	[ ] *							
COMPARE [ /	] [ ]	[и] [и]	[ ]							
RECOMMENDATIONS:	(If different	from NASA)								
[ /	] [ ]	[ NA] [ ]	[ ] ADD/DELETE)							
* CIL RETENTION	RATIONALE: (If a	pplicable) ADEQUATE INADEQUATE	-							
REMARKS: #111 SAYS AN OPE HOT READING.	N CAUSES A COLD	READING. NASA SAYS	OPEN CAUSES A							
NASA FMEA 06-3-0	627-1 OPEN OR SE	NSOR OUT OF TOLERANG	CE.							
SWITCHING TO RED SCREEN B IS NOT	UNDANT CONTROLLE APPLICABLE TO ST	R RESTORES NORMAL OF ANDBY REDUNDANCY.	PERATION.							

ASSESSME ASSESSME NASA FME	ENT	I			: 1/08/87 HYDWSB-112 06-3-0627-1											ASA DA BASELI N	NĒ	[ x	]	
SUBSYSTE MDAC ID:					11	_		'AN	ΙK	TEM	P	S	ENSORS	5	_					
LEAD ANA	LY	ST	:		J.	שמ	/AI													
ASSESSME	ENT	:																		
	CR	_	ICA LIG			•		RE	EDI	JNDA	NC	CY	SCREI	ENS	5			CIL ITEM		
	1		N/F					A				В			С		-			
NASA IOA	[		/1 /1				[	P P	]		[	P N	] A]	[	P P	]		[	]	*
COMPARE	[		/		]		[		]		[	N	]	[		]		[	]	
RECOMMEN	IDA!	ri(	ONS	:		(If	di	ff	e:	rent	. 1	fr	om NAS	5A)	i					
	[		/		]		[		]		[	N	A]	[		]	(AE	[ D/D/	] ELE	TE)
* CIL RI	ETEI	NT:	ION	R	LAT	'ION <i>E</i>	LE	E:	(:	If a	pp	01.	icable			DEQUAT DEQUAT		[	]	
REMARKS:		06-	-3-	06	27	-1 8	i (	6-	-3-	-062	7-	-2	COMB	ENE	ED.					
WE DIFF	WE DIFFER ON WHAT READING A SHORT WOULD CAUSE (HOT VS COLD).																			
SWITCHING TO REDUNDANT CONTROLLER RESTORES NORMAL OPERATION. SCREEN B IS NOT APPLICABLE TO STANDBY REDUNDANCY.																				

ASSESSMENT DATE: ASSESSMENT ID: NASA FMEA #:	NASA DATA BASELINE NEW								
SUBSYSTEM: MDAC ID: ITEM:	HYD/WSB 113 BOILER T	TANK TEMP	SENSORS						
LEAD ANALYST:	J. DUVAI	,							
ASSESSMENT:									
CRITICAL FLIGH	CIL ITEM								
HDW/FU	NC	A	В	С					
NASA [ 3 /1R IOA [ 3 /1R	] [	P ] [ P ] [	[ P ] [ P ]	[ ] *					
COMPARE [ /	] [	] [	N ]	[ ]	[ ]				
RECOMMENDATIONS:	(If di	ifferent	from NAS	A)					
[ /	] [	] [	NA]	[ ] (A	[ DD/DELETE)				
* CIL RETENTION	RATIONALE	E: (If ap	plicable	ADEQUATE	[ ]				
DEWS DEC.				INADEQUATE					
REMARKS: NASA FMEA 06-3-0627-1 ERRONEOUS HOT CONDITION AND 06-3-0627-2 ERRONEOUS COLD CONDITION ARE COMBINED INTO ONE FMEA 06-3-0627-2 ELECTRICAL SHORT OR SENSOR OUT OF TOLERANCE. SWITCHING TO REDUNDANT CONTROLLER RESTORES NORMAL OPERATION. SCREEN B IS NOT APPLICABLE TO STANDBY REDUNDANCY.									

SUBSYSTEM: MDAC ID:	HYDWSB-114 06-3-0611 HYD/WSB 114	NASA DATA: 4 BASELINE [ ] -1 NEW [ X ] NK HEATERS									
LEAD ANALYST:	J. DUVAL										
ASSESSMENT:											
CRITICALITY REDUNDANCY SCREENS FLIGHT											
HDW/FUI	NC A		B		Į.,						
NASA [ 3 /1R IOA [ 3 /1R	] [ P	] [	] [ q [ AN	P ] P ]	[ ] *						
COMPARE [ /	] [	] [	и ] [	]	[ ]						
RECOMMENDATIONS:	(If dif	ferent f	rom NASA)								
[ /	] [	] [	NA] [	] (AI	[ ] DD/DELETE)						
* CIL RETENTION 1	RATIONALE:	(If app		ADEQUATE ADEQUATE	•						
REMARKS: NASA FMEA 06-3-00 CONDITIONS - 061					& SHORT						
SWITCHING TO REDUNDANT CONTROLLER RESTORES NORMAL OPERATION. SCREEN B IS NOT APPLICABLE TO STANDBY REDUNDANCY.											

ASSESSMENT DATE: ASSESSMENT ID: NASA FMEA #:	HYDWSB-11	L4A		BASELINE NEW						
	HYD/WSB 114 BOILER TA	ANK HEAT	ERS							
LEAD ANALYST:	J. DUVAL									
ASSESSMENT:										
	ITY I	CY SCREE	NS	CIL ITEM						
	FLIGHT HDW/FUNC A B C									
NASA [ 3 /1R IOA [ 3 /1R	] [ ]	P ] [ P ] [	P ] NA]	[ P ] [ P ]	[ ] *					
COMPARE [ /	] [	] [	N ]	[ ]	[ ]					
RECOMMENDATIONS:	(If di	fferent	from NAS	A)						
[ /	] [	] [	NA]	[ ] (A	[ ] LDD/DELETE)					
* CIL RETENTION	RATIONALE:	(If ap	plicable							
· · · · · · · · · · · · · · · · · · ·			:	ADEQUATE NADEQUATE						
REMARKS:  NASA FMEA 06-3-0611-1 AND 06-3-0621-1 COVER THE OPEN & SHORT  CONDITIONS - 0611-1 IS A PRIMARY CONTROLLER FMEA.										
SWITCHING TO REDUNDANT CONTROLLER RESTORES NORMAL OPERATION. SCREEN B IS NOT APPLICABLE TO STANDBY REDUNDANCY.										

ASSESSMENT DATE: ASSESSMENT ID: NASA FMEA #:	HYDWSB-11	/08/87 NASA DATA YDWSB-115 BASELINE 6-3-0611-1 NEW									
SUBSYSTEM: MDAC ID: ITEM:	HYD/WSB 115 BOILER TAN	•									
LEAD ANALYST:	J. DUVAL	DUVAL									
ASSESSMENT:											
CRITICAL	CIL ITEM										
FLIGHT HDW/FUI		E	1	C	TIEM						
NASA [ 3 /1R IOA [ 3 /1R	] [ P	] [ F		[ P ] [ P ]	[ x ] *						
COMPARE [ /	] [	] [ N	1	[ ]	[ N ]						
RECOMMENDATIONS:	(If dif	ferent fr	om NAS	A)							
[ /	] [	] [	]	[ ] (A)	[ DD/DELETE)						
* CIL RETENTION	RATIONALE:	(If appl		) ADEQUATE INADEQUATE	[ ]						
REMARKS: CONCUR WITH NASA	SCREEN B.										
SHORT TO GROUND	COVERED BY	FMEA 06-	3-0611	-1 (PRIMARY	CONTROLLER).						

ASSESSMENT DATE: ASSESSMENT ID: NASA FMEA #:	1/08/87 HYDWSB-	116		NASA DATA BASELINE NEW		]				
SUBSYSTEM: MDAC ID: ITEM:	HYD/WSB 116 STEAM VI	·								
LEAD ANALYST:	J. DUVA									
ASSESSMENT:										
CRITICAL: FLIGH HDW/FU	T T	REDUNDA A	ANCY SCRE	ens C	CIL					
NASA [ / IOA [ 3 /3	] [	NA]	[ ] [ NA]	[ ] [ NA]	[	] *				
COMPARE [ N /N	<b>3</b> [	<b>N</b> ]	[и]	[и]	[	3				
RECOMMENDATIONS:	(If d	ifferen	t from NA	SA)						
[ 3 /3	] [	NA]	[ NA]	[ NA] (A	[ .DD/D	] ELETE				
* CIL RETENTION :	RATIONAL	E: (If	applicabl	e) ADEQUATE INADEQUATE	[	]				
<del></del>	UTC EXTI	יושה כהטו	ידם אם חוזו	COCNTZED BY	Δ.ΉΜΉ					

NASA DATA:

ASSESSMENT DATE: ASSESSMENT ID: NASA FMEA #:	HYDWSB-117	NASA D BASEL	
SUBSYSTEM: MDAC ID: ITEM:	HYD/WSB 117 STEAM DUMP NOZ	<b>ZLE</b>	
LEAD ANALYST:	J. DUVAL		
ASSESSMENT:			
CRITICAL FLIGH	CIL ITEM		
HDW/FU		ВС	
NASA [ 2 /1R IOA [ 3 /1R		[ P ] [ P ] [ NA] [ P ]	[ X ] * [ ]
COMPARE [ N /	] [ ]	[иј [ј	[и]
RECOMMENDATIONS:	(If differen	t from NASA)	
[ 3 /1R	] [ ]	[ NA] [ ]	[ D ] (ADD/DELETE)
* CIL RETENTION	RATIONALE: (If	applicable) ADEQUA INADEQUA	
#117 DOES NOT CO #117 CONSIDERS R IOA RECOMMENDS T OFF SETAM VENT P "STUCK OR INGEST	NSIDER RAIN GET ESTRICTED FLOW HAT "CONTAMINAT LUG" BE DELETED ED BLOW-OFF STE HEN, SWITCHING	O ORIFICE AND SHOR TING INTO THE ORFI TO BE CAUSED BY LO ION" AND "STUCK OR FROM CAUSES FOR O AM VENT PLUG" BE I TO REDUNDANT CONTR NOT APPLICABLE TO	CE WHILE ON PAD SS OF HEATERS. INGESTED BLOW- 6-3A-0604-1 AND NCORPORATED INTO OLLER RESTORES

STANDBY REDUNDANCY.

ASSESSMENT DATE: ASSESSMENT ID: NASA FMEA #:	•	3		ASA DATA: BASELINE [ NEW [	x ]		
SUBSYSTEM: MDAC ID: ITEM:	HYD/WSB 118 HYDRAULIC/	LUBE OIL	WATER FII	LTERS			
LEAD ANALYST:	J. DUVAL						
ASSESSMENT:							
CRITICAL FLIGH		EDUNDANCY	SCREENS		CIL ITEM		
HDW/FU	NC A	В	С				
NASA [ / IOA [ 2 /1R	] [ ] [ P	] [ ] [ P	] [ ] [ P	] [	x ] *		
COMPARE [ N /N	] [ N	] [ N	] [ N	] . [	иј		
RECOMMENDATIONS:	(If diff	ferent fro	om NASA)				
[ 2 /1R	] [ P	] [ P	] [ P	] [ (ADD/	A ] 'DELETE		
* CIL RETENTION	RATIONALE:	(If appl	AI	DEQUATE [	]		
REMARKS: NO NASA FMEA. T	HIS FAILURE	E SHOULD	BE RECOGNI	ZED BY A F	MEA.		

ASSESSMENT DATE: ASSESSMENT ID: NASA FMEA #:	1/08/87 HYDWSB-1 06-3-06	119		NASA DATA: BASELINE NEW	[ x ]					
SUBSYSTEM: MDAC ID: ITEM:	HYD/WSB 119 STEAM D									
LEAD ANALYST:	J. DUVA	Ľ								
ASSESSMENT:										
CRITICAL FLIGH	CIL ITEM									
HDW/FU		A	В	C						
NASA [ 3 /1R IOA [ 3 /1R		P ] [ P ] [	P ] [ NA] [	P ] P ]		<b>*</b>				
COMPARE [ /	] [	] [	и ] [	]	[ ]					
RECOMMENDATIONS:	(If d	ifferent f	from NASA)							
[ /	] [	] _ [	NA] [	] (AI	[ DD/DEI	LETE)				
* CIL RETENTION	RATIONAL	E: (If app	' · · · · ·	ADEQUATE ADEQUATE		 				
REMARKS: 06-3-0624-1 STAT CAUSES HOT SIGNA CASE.	ES "OPEN' L - ERROI	" CAUSES H NEOUS OUTE	OT SIGNAL PUT IS THE	- #119 ST RESULT IN	TATES V EITH	"SHORT IER				
SCREEN B IS NOT	APPLICAB	LE TO STAN	NDBY REDUN	DANCY.						

ASSESSME ASSESSME NASA FME	NT I			8/87 WSB-12 3-0624		NASA DATA: BASELINE [ ] NEW [ X ]							
SUBSYSTE MDAC ID:	M:		120	/WSB AM DUM	P NO	ZZLE	TEMP	SEN	isor				
LEAD ANA	LYST	:	<b>J.</b>	DUVAL									
ASSESSME	NT:										-		
	CRIT	ICAL LIGH		R	DANC	Y SCR	-	CIL ITEM					
	_	W/FU		A		1	В		C		,		
NASA IOA	[ 3 [ 3	/3 /3	]	и ] и ]	A]	[ ] [ ]	NA] NA]		NA] NA]		[	]	*
COMPARE	[	/	]	[	]	. [	]	[	]		[	]	
RECOMMEN	DATI	ons:	(	If dif	fere	nt f	rom N	ASA)	, )				
	[	/	]	[	]	[	1		]	(	[ ADD/	DELI	ETE)
* CIL RE	TENT	'ION	RATI	ONALE:	(If	app	licab		ADEQ	UATE	•	]	
REMARKS: 06-3-962 SENSOR C			#119	DIFFE	R ON	WHA'	r CAU				•	COLI	)

ASSESSME ASSESSME NASA FME	ENT I ENT 3 EA #:	DATE: ID:	1/0 HYI 06-	708/87 YDWSB-121 5-3-0624-1							NASA DATA: BASELINE [ ] NEW [ X ]						
SUBSYSTE MDAC ID:	EM:		HYI 121	)/WSE	3					P SEI	NSO	OR			-		
LEAD ANA	LYSI	r:	J.	DUV	L												
ASSESSME																	
CRITICALITY REDUNDANCY SCREENS FLIGHT										CIL ITEM							
	н	OW/FU	NC		A			В			C						
NASA IOA	[ 3	3 /1R 3 /1R	]	[ ]	P	] A]	[	P NA	]	]	P NA	] A]		[	]	*	
COMPARE	[	/	]	. [	N	]	[	N	]	. [	N	]		[	]		
RECOMMEN	IDAT]	cons:	(	(If d	lif:	fere	nt f	ro	m l	NASA)	)						
	[	/	]	[		] .	[	NA	]	[		]	(AI		] ELE		
* CIL RE	CTENI	CION :	RATI	ONAI	E:	(If	app	oli	cak		λſ	EOU	ATE ATE	Г	]		
REMARKS: NASA COM CRITICAL COMBINED OUT OF TAPPLICAN BE A-2,	BINE LITY AND OLEF BLE T	3/1R ASS RANCE TO ST	. A IGNE DUE ANDE	SHO ED A E TO	RT CR: CA:	(EL ITIC LIBR	ECTF ALIT ATIC	RIC 'Y ON	AĹ) OF SHI	OF ANI 3/3	тс Э С	LER OUT WOR SCRE	ANCE, OF TO KSHEE EN B	AS LEF ET 1	SIG ANC 10 NOT	E WI	ERE ATS

ASSESSMENT DATE: ASSESSMENT ID: NASA FMEA #:	1/08/87 HYDWSB-121A 06-3-0624-2		NASA DATA: BASELINE NEW	
MDAC ID:	HYD/WSB 121 STEAM DUMP NOZ	ZLE TEMP SI	ENSOR	
LEAD ANALYST:	J. DUVAL			
ASSESSMENT:				
CRITICAL: FLIGHT	ITY REDUND P	ANCY SCREEN	NS C	CIL ITEM
HDW/FU				
NASA [ 3 /3 IOA [ 3 /1R	] [ NA] ] [ NA]	[ NA] [ NA]	[ NA] [ NA]	[ ] *
COMPARE [ /N	] [ ]	[ ]	[ ]	[ ]
RECOMMENDATIONS:	(If differer	at from NAS	<b>A</b> )	
	] [ ]	[ NA]	[ ] (A)	[ ] DD/DELETE
* CIL RETENTION	RATIONALE: (If		) ADEQUATE INADEQUATE	[ ]

IOA CONCURS WITH NASA ASSESSMENT.

ASSESSMENT DATE: ASSESSMENT ID: NASA FMEA #:	1/08/87 HYDWSB-123 06-3-0622			NASA DATA BASELINI NEV			
SUBSYSTEM: MDAC ID: ITEM:	HYD/WSB 122 STEAM NOZ	ZLE HEA	rers				
LEAD ANALYST:	J. DUVAL						
ASSESSMENT:							
CRITICAL FLIGH		EDUNDAN	CY SCREE	ns	CIL ITEM		
HDW/FU	NC A		В	C			
NASA [ 3 /1R IOA [ 3 /1R	[ P	] [	P ] NA]	[ P ] [ P ]	[ ] *		
COMPARE [ /	J [	] [	и ј	[ ]	[ ]		
RECOMMENDATIONS:	(If dif:	ferent :	from NAS	A)			
[ /	] [	] . [	NA]	[ ]	[ ] ADD/DELETE		
* CIL RETENTION REMARKS:	RATIONALE:	(If ap	plicable	ADEQUATE			
SCREEN B IS NOT	APPLICABLE	TO STA	NDBY RED	UNDANCY.			

ASSESSMENT DATE: ASSESSMENT ID: NASA FMEA #:	HYDWSB-123	NASA DATA BASELINE NEW	
SUBSYSTEM: MDAC ID: ITEM:	HYD/WSB 123 BOILER WATER FIL	L AND DRAIN	
LEAD ANALYST:	J. DUVAL		
ASSESSMENT:			
CRITICAL FLIGH	ITY REDUNDAN	CY SCREENS	CIL ITEM
HDW/FU		ВС	1164
NASA [ 3 /3 IOA [ 2 /1R	] [F] [ ] [P] [	F ] [ P ] P ] [ P ]	[ x ] *.
COMPARE [ N /N	] [N][	иј [ј	[ N ]
RECOMMENDATIONS:	(If different	from NASA)	
[ /	] [NA] [	NA] [NA] (A	[ ] .DD/DELETE)
	RATIONALE: (If ap	plicable) ADEQUATE INADEQUATE	
SEPARATE ITEMS - IOA CONCURS WITH SHOULD BE "NA" P	#123 CONSIDERS C NASA FMEA CRITIC ER NSTS 22206 DOC	17A-3 CONSIDER CAP AP & POPPET AS ONE ALITIES. HOWEVER, UMENT. FMEA 06-3-0 MEA 06-3-0617A-3 SH	ASSEMBLY. ALL SCREENS 617-3

ASSESSMENT DATE: ASSESSMENT ID: NASA FMEA #:	1/08/87 HYDWSB-1 06-3-061	.23A .7A-3		NASA DATA: BASELINE NEW							
SUBSYSTEM: MDAC ID: ITEM:	HYD/WSB 123 BOILER W										
LEAD ANALYST:	J. DUVAI	j									
ASSESSMENT:											
CRITICAL FLIGH		REDUNDANC	Y SCREENS		CIL ITEM						
HDW/FU		A	В	C							
NASA [ 3 /3 IOA [ 2 /1R	] [	F ] [ P ] [	F ] [ P ] [	P ] P ]	[ x ] *						
COMPARE [ N /N	] [	и ] [	и][	]	[ N ]						
RECOMMENDATIONS:	(If di	.fferent f	rom NASA)								
[ /	] [	NA] [	NA] [	NA] (AD	[ ] DD/DELETE)						
* CIL RETENTION	RATIONALE	: (If app	•	ADEQUATE ADEQUATE							
REMARKS: NASA FMEA 06-3-0 SEPARATE ITEMS - IOA CONCURS WITH SHOULD BE "NA" P SHOULD ADDRESS P	#123 CON NASA FME ER NSTS 2	ISIDERS CA CA CRITICA 2206 DOCU	7A-3 CONS P & POPPE LITIES. MENT. FM	IDER CAP & T AS ONE A HOWEVER, A	A POPPET AS ASSEMBLY. ALL SCREENS						

CAP FAILURE.

ASSESSMEN ASSESSMEN NASA FME	NT :	ID:	HYD	3/87 VSB-12 3-0617			NASA DATA: BASELINE [ ] NEW [ X ]							
SUBSYSTEMDAC ID:	M:		HYD, 124 BOI	/WSB LER H2	o dr	AIN								
LEAD ANA	LYS	T:	J. 1	DUVAL										
ASSESSME	NT:													
		TICAL FLIGH		R	EDUN	DANC?	SCR				CI II	L EM	[	
	Н	DW/FU	NC	A		]	В	(	C					
NASA IOA	[	3 /3 3 /3	]	[ N [ N	A] A]	[ ]	NA] NA]	[ ]	NA] NA]		]		] ]	*
COMPARE	[	/	]	[	]	[	]	[	]		[		]	
RECOMMEN	DAT	ons:	(	If dif	fere	ent f	rom N	ASA)				÷ .		
	[	/	]	[	)	[	]	[	]	(A)		'DE	] ELE	TE)
* CIL RE	TEN	TION	RATI	ONALE:	(If	app	licab		ADEQU		[		]	
REMARKS:						-		IN	ADEQU	ATE	[		j	

ASSESSMEN ASSESSMEN NASA FME	D:	1/08/ HYDWS 06-3-					NASA DAT BASELII NI		x	]		
SUBSYSTEM MDAC ID:	M:		HYD/W 125 LUBE		DRAI	N						
LEAD ANALYST: J. DUVAL												
ASSESSME	T:										=	
(	'ICAL 'LIGH' W/FU	REDUNDANCY SCREENS A B					c c		CIL ITEM			
NASA IOA	[ 3	/3	]	[ N	'A] 'A]	[ N	IA] IA]	[	NA] NA]	]		] <b>*</b> ]
COMPARE	[	/	]	[	]	[	1	[	]	[		]
RECOMMENI	DATI	ONS:	(If	dif	fere	nt fr	om N	ASA)				
	[	/	1	[	]	[	]	[	]	_	/DE	] LETE)
* CIL RE	PENT	I NOI	RATION.	ALE:	(If	appl	.icab	·	ADEQUATE	-		]
REMARKS:				-						- L		_

ASSESSMENT DATE: 1/08/87  ASSESSMENT ID: HYDWSB-126  NASA FMEA #: 06-3A-0616-3  NASA DATA: BASELINE [ ] NEW [ X ]
SUBSYSTEM: HYD/WSB MDAC ID: 126 ITEM: LUBE OIL DRAIN
LEAD ANALYST: J. DUVAL
ASSESSMENT:
CRITICALITY REDUNDANCY SCREENS CIL FLIGHT ITEM
HDW/FUNC A B C
NASA [3/1R] [F] [F] [P] [X]* IOA [2/1R] [P] [P] [X]
COMPARE [ N / ] [ N ] [ N ] [ ]
RECOMMENDATIONS: (If different from NASA)
[ / ] [ ] [ ] (ADD/DELETE)
* CIL RETENTION RATIONALE: (If applicable)  ADEQUATE [ X ]  INADEQUATE [ ]
REMARKS: NASA FMEA 06-3-0616-2 CONSIDERS POPPET LEAKAGE - INTERNAL TO CA - CAP SEPARATE. IOA CONCURS WITH FMEA 0616-3.
#126 CONSIDERS POPPET & CAP AS AN ASS'Y.

ASSESSMENT DATE: ASSESSMENT ID: NASA FMEA #:	HYDWSB-126A	NASA DATA: BASELINE NEW	
SUBSYSTEM: MDAC ID: ITEM:	HYD/WSB 126 LUBE OIL DRAIN		
LEAD ANALYST:	J. DUVAL		
ASSESSMENT:			- 1- 12 1 1211
FLIGH'	ITY REDUNDANCY I' NC A E		CIL ITEM
11511/101	-		• •
NASA [ 3 /1R IOA [ 2 /1R	] [P] [F]	'] [P] '] [P]	[ X ] * [ X ]
COMPARE [ N /	] [ ] [ ]	[ ]	[ ]
RECOMMENDATIONS:	(If different fr	om NASA)	
1 /	] [ ] [	] [ ] (Ar	[ ] DD/DELETE)
* CIL RETENTION I	RATIONALE: (If appl	icable) ADEQUATE INADEQUATE	
REMARKS: NASA FMEA 06-3-06 - CAP SEPARATE.	616-2 CONSIDERS POR IOA CONCURS WITH F	PPET LEAKAGE - INTE	-
#126 CONSIDERS PO	OPPET & CAP AS AN A	ASS'Y.	

ASSESSMENT DATE: 1/08/87 ASSESSMENT ID: HYDWSB- NASA FMEA #: 06-3-06						3-:										DATA ELINI NEV	E [		-	
SUBSYSTEMDAC ID:				12	D/WS 7 QUII		LEV	ÆL	SE	NS	sor									
LEAD ANALYST: J. DUVAL																				
ASSESSME	NT:											. 1 2.								
CRITICALIT FLIGHT					ITY REDUNDANCY SCREENS						3				IL TE					
	HDW/FUNC A									В			С			•		•		
NASA IOA	[ [	3	/1R /1R	]		[	P P	]		]	P NA	]	[	P P	]		[	•	]	*
COMPARE	[		/	]		[		]		[	N	)	[		]		[	,	]	
RECOMMEN	DAT	'IO	NS:		(If	d:	if	fer	ent	. 1	fro	m Ni	ASA)	}	-					
	[		/	]		[		]		[	NA	]	[		]	. (2	] Ida	D/D	] ELF	ETE)
* CIL RE	TEN	TI	ON 1	RAT	ION	AL	E:	(I	fa	p	pli	cab)				UATE UATE		:	]	
REMARKS: SCREEN B	IS	N	OT I	APP	LIC	AB:	LE	то	ST	'Al	DB	Y R	EDUI	ND!	ĮNC.	Υ.				

ASSESSME ASSESSME NASA FME	ENT I	D:	HYD	WSB-1	28					A DATA SELINE NEW			
SUBSYSTE MDAC ID:			HYD, 128 LIQU		EVEL	SENS	or						
LEAD ANA	LYSI	!:	J. 1	DUVAL	,								
ASSESSME	ENT:												
		'ICAI 'LIGH			REDUNDANCY			REENS	5		CIL ITEM		
	HDW/FUNC				A		. В		С				
NASA IOA	[ 3	/3	]	]	F ] NA]	]	NA] NA]	[	P ] NA]		[ [	]	*
COMPARE	[	/	]	[	и ј	[	]	[	N ]		[	]	
RECOMMEN	IDATI	ons:	( ]	If di	ffere	ent f	rom N	IASA)	)				
	[	/	]	[	NA]	[	]	. [	NA]	(A	[ .DD/I		TE)
* CIL RE	ETENT	NOI	RATIO	ONALE	: (I1	app	licab		ADEQ NADEQ	QUATE QUATE	[	]	
REMARKS: ALL SCRE DOCUMENT	EENS	SHOU	LD BI	E "NA	" FOI	R 3/3	CRIT	-					

ASSESSMENT DATE: ASSESSMENT ID: NASA FMEA #:	1/08/87 HYDWSB-129 06-3-0632-			NASA DATA BASELINE NEW		]
SUBSYSTEM: MDAC ID: ITEM:	HYD/WSB 129 LIQUID LEV	VEL SENS	OR			
LEAD ANALYST:	J. DUVAL					
ASSESSMENT:						
CRITICAL FLIGH	<del></del>	EDUNDANC	Y SCREENS	5	CIL	
HDW/FU			В	С	1111	· <b>*</b>
NASA [ 3 /1R IOA [ 3 /1R	] [ P	] [	P ] [ NA] [	P ] P ]	[	] <b>*</b>
COMPARE [ /	] [	] [	и][и	]	[	]
RECOMMENDATIONS:	(If dif:	ferent f	rom NASA	)		
[ /	] [	] [	NA] [	] (A	[ \DD/D	] ELETE)
* CIL RETENTION	RATIONALE:	(If app		ADEQUATE NADEQUATE	-	]
REMARKS: SCREEN B IS NOT	APPLICABLE	TO STAN	DBY REDU	NDANCY.		

ASSESSME ASSESSME NASA FME					DATA ELINE NEW	-	]						
SUBSYSTE MDAC ID: ITEM:	м:		HYD/ 129 LIQU		EVEL	SENSO	)R						
LEAD ANALYST: J. DUVAL													
ASSESSME	NT:												
	FLIGHT		REDUNDANCY SCREE			EENS	S C		CIL ITEM				
		•			A		-						
NASA IOA	[ :	3 /3 3 /1R	]	]	NA] P]	N ]	IA] IA]	[ [	NA] P]		[	] *	:
COMPARE	[	/N	3	[	n j	[	]	[	n j		[	]	
RECOMMEN	DAT:	ions:	(1	f di	ffere	ent fr	om N	ASA)	1				
	C	/	]	[	]	[	]	[	. ]	(A)	[ DD/D	] ELET	E)
* CIL RE	TEN	rion i	RATIC	NALE	: (If	appl	icab.			UATE UATE	•	]	
TA3 0000	TIDO	TATE OF T	313 C 3	3.00	PCCME	NT(T)							

ASSESSMENT DATE: 1/08/87  ASSESSMENT ID: HYDWSB-130  NASA FMEA #: 06-3-0629-1  NEW [ X ]
SUBSYSTEM: HYD/WSB MDAC ID: 130 ITEM: LUBE OIL TEMP SENSOR
LEAD ANALYST: J. DUVAL
ASSESSMENT:
CRITICALITY REDUNDANCY SCREENS CIL FLIGHT ITEM
HDW/FUNC A B C
NASA [3/1R] [P] [P] [P] []* IOA [3/1R] [P] [NA] [P] []
COMPARE [ / ] [ ] [ N ] [ ]
RECOMMENDATIONS: (If different from NASA)
[ / ] [ ] [ NA] [ ] [ ] (ADD/DELETE)
* CIL RETENTION RATIONALE: (If applicable)  ADEQUATE [ ]  INADEQUATE [ ]
REMARKS: FMEA 06-3-0629-1 SAYS HOT SIGNAL CAUSED BY OPEN. 130 SAYS SHORT CAUSES HOT SIGNAL.
SCREEN B IS NOT APPLICABLE TO STANDBY REDUNDANCY.

ASSESSMENT DATE: 1/08/87 ASSESSMENT ID: HYDWSB-131 NASA FMEA #: 06-3-0629-2													BASE		[	x	]			
SUBSYSTE MDAC ID: ITEM:				13	1			- Cem	P SEI	150			٠.							
LEAD ANA	LYS	ST	:	J.	DUV	ΆΙ	L													
ASSESSME	NT:	:																		
		F	LIGH'	Г					NDAN		SCRE	ENS	s c			CI	L	1		
	Ì	HDI	W/FU	NC			A			В			C							
NASA IOA	[	3 3	/1R /1R	]		]	F P	]	[	P NZ	] A]	[	P P	]		[	X	]	*	
COMPARE	[		/	]		(	N	]	[	N	]	[		]		[	N	]		
RECOMMEN	IDA'	ric	ons:		(If	đi	if	fer	ent i	fro	om NA	SA)	)							
	[		/	]		[	P	]	(	NZ	A]	[		] .	(A	.DD/	D DE	] ELE	TE)	)
* CIL RE	ETEI	YT:	ION I	RAT:	IONA	LI	€:	(I	f app	<b>)</b> 1:	icabl		AI IAN	DEQU DEQU	ATE ATE	[	x	]		
REMARKS:																				_
FMEA 06- CAUSED F HANDBOOF RECOGNIZ	3Y (	OPI VOI	EN. L 2,	IO.	A EV G 12	AI	LUZ 4,	ATI RE	ON IS	3 1	BASED	01	1 5	SHUT	<b>TLE</b>	SYS	TE	EMS		

ASSESSMENT DATE: ASSESSMENT ID: NASA FMEA #:	1/08/87 HYDWSB-132	NASA DATA: BASELINE [ ] NEW [ X ]									
SUBSYSTEM: MDAC ID: ITEM:	HYD/WSB 132 WATER TANK										
LEAD ANALYST:	J. DUVAL										
ASSESSMENT:											
CRITICALITY REDUNDANCY SCREENS CIL FLIGHT ITEM											
HDW/FU		C									
NASA [ / IOA [ 1 /1	] [ ] [ ] ] [ NA] [ NA]	[ ]									
COMPARE [ N /N	] [N] [N]	[ N ] [ N ]									
RECOMMENDATIONS:	(If different from NA	ASA)									
,	] [ ] [ ]	[ ] [ ] (ADD/DELETE)	)								
* CIL RETENTION	RATIONALE: (If applicabl	le) ADEQUATE [ ] INADEQUATE [ ]									
	T QUALIFY AS PRESSURE VE D #132 SHOULD BE DELETED		PARA								

ASSESSMEI ASSESSMEI NASA FME	NT ID:	1/08/8 HYDWSE 06-3A-	-133					ASA DAT BASELIN NE			]	
SUBSYSTEM MDAC ID:	M:	HYD/WS 133 WATER		ζ								
LEAD ANA	LYST:	J. DUV	'AL									
ASSESSME	NT:											
(	CRITICAL FLIGH	T	RI	EDUND		SCRE				IL TEM	Ī	
	HDW/FU	NC	A		В		С					
NASA IOA	• '	]	[ P	]	[ P	]	[ P	]	[ [	X X	] ;	k
COMPARE	[ /	]	[	]	[	]	[	]	[		]	
RECOMMEN	DATIONS:	(If	diff	feren	t fro	om NAS	SA)					
	[ /	1	[	]	Ĺ	]	[	] (	[ ADD	/DE		ΓE,
* CIL RE	TENTION	RATIONA	LE:	(If	appli	icable	A	DEQUATE DEQUATE		x	]	
REMARKS:									·			

ASSESSME ASSESSME NASA FME	NT :	ID:	HY	1/08/87 HYDWSB-134 06-3A-0608-1											DA' ELII N		[	x	]	
SUBSYSTE MDAC ID: ITEM:	M:		13	D/WS 4 TER		ANI	ĸ													
LEAD ANA	LEAD ANALYST: J. DUVAL																			
ASSESSME	NT:																			
	]	TICAL FLIGH DW/FU	Г			RI A	EDUI	IADI	NC	Y B	SCR	EEN	s c					[L	1	
NASA IOA		2 /1R 2 /1R			[	P P	]		[	P P	]	]	P P	]			[	X X	]	*
COMPARE	[	/	]		[		]		[		]	[		]			[		]	
RECOMMEN	DAT:	ions:		(If	d:	if	fere	ent	f	ro	om N	ASA	)							
	[	/	]	٠	[		]		[		]	[		] ·	•	(Al	] ,ac	/DI	] ELI	ETE
* CIL RE	TEN	TION	RAT	IONA	L	E :	(I:	f a	ÞÞ	)li	lcab				UAT: UAT:		[	x	]	

REMARKS:

ASSESSME ASSESSME NASA FME SUBSYSTE MDAC ID: ITEM:	NT I A #:	Ď:	1/08/8 HYDWSI 06-3A- HYD/WS 134 WATER	3-1: -06: 5B	08-2				NASA I BASE		[	]	
LEAD ANA	LYST	:	J. DUV	/AL									
ASSESSME	NT:												
		ICALI		]	REDUN	DANCY	SCRI	EENS			CIL		
		W/FUI		ž	A	В			C .				
NASA IOA	[ 2 [ 2	/1R /1R	]	[ ]	P ] P ]	[ P [ P	]	[	P ] P ]		X ]	]	*
COMPARE	[	/	]	E	]	[	]	[	]		[	]	
RECOMMEN	DATI	ons:	(If	<b>di</b> :	ffere	nt fr	om NA	ASA)					
	[	7	]	[	]	[	] .	(	]	(AI	[ D/D		ETE)
* CIL RE	TENT -	ION I	RATION	ALE	: (If	appl:	icabl	-	ADEQUA ADEQUA		[ X	]	

ASSESSMEN ASSESSMEN NASA FME	NT I	D:	HYDV	8/87 VSB-1 8-061					NASA DAT BASELIN NE		<b>(</b> ]
SUBSYSTEM MDAC ID:	M:		HYD/ 135 WATH		NK FI	LL					
LEAD ANA	LYSI	r:	J. I	IAVUC	ı						
ASSESSME	NT:										
•		TICAL TLIGH			REDUN	DANC	CY SCR	EENS	3	CII	
		W/FU			A		В		C		<b></b>
NASA IOA	[ 3	3 /3	]	[	NA] NA]	]	NA] NA]	]	NA] NA]	[	] * ]
COMPARE	[	/	]	[	]	[	]	[	]	[	]
RECOMMEN	DATI	ons:	(1	[f di	ffere	ent f	from N	ASA)	)		
•	[	/	]	[	]	[	]	[	] (	ADD/I	] DELETE)
* CIL RE	TENT	rion	RATI(	ONALE	E: (If	app	olicab		ADEQUATE		]
REMARKS:	,						. <u>.</u>	:		-	

ASSESSMENT DATE: ASSESSMENT ID: NASA FMEA #:	HYDWSB-136	; 3 <b>-</b> 2		NASA DATA BASELINE NEW	
	HYD/WSB 136 WATER TANK	FILL			
LEAD ANALYST:	J. DUVAL				
ASSESSMENT:					
CRITICAL		DUNDANC	Y SCREE	NS	CIL ITEM
FLIGHT HDW/FUI			В	С	TIEM
NASA [ 3 /1R IOA [ 2 /1R	] [ P [ P	] [	F ] P ]	[ P ] [ P ]	[ X ] * [ X ]
COMPARE [ N /	] [	] [	и ј	[ ]	[ ]
RECOMMENDATIONS:	(If diff	erent f	rom NAS	A)	
[ /	1 (	] [	]	[ ] (AI	[ ] DD/DELETE)
* CIL RETENTION I	RATIONALE:	(If app		) ADEQUATE INADEQUATE	
REMARKS: FMEA CONSIDERS PO CONSIDERS THEM AS 3.					ES. #136 -0613-2 AND -

ASSESSMENT DATE: ASSESSMENT ID: NASA FMEA #:	HYDWSB-136A	NASA DATA BASELINE NEW										
SUBSYSTEM: MDAC ID: ITEM:	HYD/WSB 136 WATER TANK FILL											
LEAD ANALYST:	J. DUVAL											
ASSESSMENT:												
CRITICALITY REDUNDANCY SCREENS CIL ITEM												
HDW/FU	FLIGHT HDW/FUNC A B C											
NASA [ 3 /11 IOA [ 2 /11	R] [F] [F R] [P] [P	] [P]	[ X ] * [ X ]									
COMPARE [ N /	] [и] [и	] [ ]	[ ]									
RECOMMENDATIONS	(If different fr	om NASA)										
( )	] [ ] [	] [ ] (A	[ ] DD/DELETE)									
* CIL RETENTION	RATIONALE: (If appl	icable) ADEQUATE INADEQUATE	[ X ]									
REMARKS: FMEA CONSIDERS I CONSIDERS THEM A	EMARKS: MEA CONSIDERS POPPET & CAP HAS TWO SEPARATE ASSEMBLIES. #136 ONSIDERS THEM AS ONE. IOA CONCURS WITH FMEA'S 06-3-0613-2 AND -											

ASSESSMENT DATE: ASSESSMENT ID: NASA FMEA #:		137		NASA DAT BASELIN NE		]
	HYD/WSB 137 WATER T	ANK HEA	TER			
LEAD ANALYST:	J. DUVA	L				
ASSESSMENT:						
CRITICAL FLIGH	T		ANCY SCREI		CIL ITE	
HDW/FU	NC	A	В	С		
NASA [ 3 /1R IOA [ 3 /1R	] [	P ] P ]	[ P ] [ NA]	[ P ] [ P ]	[ [	] <b>*</b>
COMPARE [ /	] [	]	[ N ]	[ ]	[	]
RECOMMENDATIONS:	(If d	ifferen	t from NAS	SA)		
. [ /	] [	]	[ NA]	[ ] (	[ ADD/D	] ELETE)
* CIL RETENTION	RATIONALI	E: (If	applicable	e) ADEQUATE INADEQUATE		]
REMARKS: FMEA 06-3-0611-1	ALSO CO	VERS TH	IS FAILURE		•	J
SCREEN B IS NOT	APPLICABI	LE TO S	TANDBY REI	OUNDANCY.		

ASSESSMENT DATE: ASSESSMENT ID: NASA FMEA #:	HYDWSB-	138		NASA DATA BASELINE NEW	
SUBSYSTEM: MDAC ID: ITEM:	HYD/WSB 138 WATER T	ANK HEAT	ER		
LEAD ANALYST:	J. DUVA	<b>L</b>			
ASSESSMENT:					
CRITICAL: FLIGH		REDUNDA	NCY SCREE	ens	CIL
HDW/FUI		A	В	С	
NASA [ 3 /1R IOA [ 3 /1R	] [	P ] NA]	[ P ] [ NA]	[ P ] [ NA]	[ ] *
COMPARE [ /	] [	и ј	[ N ]	[ N ]	[ ]
RECOMMENDATIONS:	(If d	ifferent	from NAS	SA)	
, , , , , , , , , , , ,	] [	1	[ NA]	[ ] (A	[ ] ADD/DELETE)
* CIL RETENTION	RATIONAL	E: (If a	pplicable	adequate	[ ]
DEWA DWG .				INADEQUATE	į j
REMARKS: FMEA 06-3-0611-1	ALSO CO	VERS THI	S FAILURE	E (CONTROLLE	IR).
SCREEN B IS NOT	APPLICAB	LE TO SI	ANDBY REI	OUNDANCY.	

ASSESSME ASSESSME NASA FME	D:	1/08 HYDW 06-3	) -1				NASA BASE	LINE		-			
SUBSYSTE MDAC ID:			HYD/ 139 WATE	'WSB ER TANI	K TEM	PS	ENSOR	:					
LEAD ANA	LYST	<b>':</b>	J. [	UVAL		,							
ASSESSME	ENT:												
	F	LIGH			EDUND		Y SCR B	EENS	c c		CII		
		•	INC				_		_				
NASA IOA	[ 3 [ 3	/3	] ]	[ NA [ NA	A] A]	[ ]	NA] NA]	[	NA] NA]		[	]	*
COMPARE	[	/	]	[	1	[	]	[	]		[	]	
RECOMMEN	IDATI	ONS:	(1	f dif	feren	t f	rom N	ASA)					
	[	/	]	[	]	[	]	[	]	(A	[ DD/E		TE)
* CIL RI	ETENT	NOI	RATIO	ONALE:	(If	app	licab		ADEQU.			]	
REMARKS: WE DIFFI (OPEN OF	ER WI			ON THE	CAUS	ES (	OF TH	E HC	T AND	COL	D RE	ADI	NGS

ASSESSMENT DATE: ASSESSMENT ID: NASA FMEA #:	1/08/87 HYDWSB-140 06-3-0626-1	NASA DATA: BASELINE [ ] NEW [ X ]								
SUBSYSTEM: MDAC ID: ITEM:	HYD/WSB 140 WATER TANK TEM	MP SENSOR								
LEAD ANALYST:	J. DUVAL	. DUVAL								
ASSESSMENT:										
CRITICAL: FLIGH		DANCY SCREENS	CIL ITEM							
HDW/FU		ВС								
NASA [ 3 /3 IOA [ 3 /3	] [ NA] ] [ NA]	[ NA] [ NA] [ NA] [ NA]	[ ] *							
COMPARE [ /	] [ ]	[ ] [ ]	[ ]							
RECOMMENDATIONS:	(If differe	nt from NASA)								
[ /	] [ ]	[ ] [ ] (	[ ] ADD/DELETE)							
* CIL RETENTION	RATIONALE: (If	applicable) ADEQUATE INADEQUATE								
REMARKS: WE DIFFER ON THE	OPEN OR SHORT	CAUSING THE HOT AND	•							

ASSESSME ASSESSME NASA FME	NT :	ID:		3-1	41 6-1				NASA DA BASELI N	NE	[ x	] -
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LEAD ANA	LYS	r:	J. DUV	/AL	ı							
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		FICAL FLIGH			REDUNI	OANC	Y SCR	EENS	5		CIL ITEN	ĸ
		DW/FU			A		В		<b>C</b>			•
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SUBSYSTI MDAC ID ITEM:				14	D/WS1 2 2 TAI												
LEAD AN	ALYS	ST	:	J.	DUV	ΆL											
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REMARKS	•											~		-		-	

ASSESSMENT DATE: ASSESSMENT ID: NASA FMEA #:					: [
MDAC ID:	HYD/WSB 143 GN2 TAN				
LEAD ANALYST:	J. DUVA	L			
ASSESSMENT:					
CRITICAL FLIGH		REDUNDA	ANCY SCREI	ens	CIL ITEM
	NC	A	В	С	
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* CIL RETENTION	RATIONAL	E: (If a	applicable		[ ]
REMARKS: FMEA 06-3-0609-2 IOA RECOMMENDS TO MODE OF FMEA 06- FROM THAT OF FME	HAT FMEA 3-0609-2	06-3-00 (EXTERI	509-2 BE 1 NAL LEAK)	NED WITH 06- RETAINED. T	3-0609-1. HE FAILURE

ASSESSMENT DATE: ASSESSMENT ID: NASA FMEA #:	1/08/87 HŸDWSB-144 06-3A-0607		NASA BASE	DATA: LINE [ ] NEW [ X ]
SUBSYSTEM: MDAC ID: ITEM:	HYD/WSB 144 GN2 REGULA	ATOR VALVE		
LEAD ANALYST:	J. DUVAL			
ASSESSMENT:				
CRITICAL: FLIGHT	r	EDUNDÂNCY S	SCREENS C	CIL
HDW/FUI		_		
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* CIL RETENTION D	RATIONALE:	(If applion	cable) ADEQU INADEQU	

ASSESSMENT DATE:	1/08/87		NASA DATA:	}
	HYDWSB-145 06-3A-0607-1		BASELINE NEW	[ X ]
	HYD/WSB 145 GN2 REGULATOR	VALVE		
LEAD ANALYST:	J. DUVAL			
ASSESSMENT:				
CRITICALI FLIGHT HDW/FUN	r	DANCY SCREENS B	<b>c</b>	CIL ITEM
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RECOMMENDATIONS:	(If differe	nt from NASA)		
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* CIL RETENTION F	RATIONALE: (If		ADEQUATE ADEQUATE	[ X ]

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SUBSYSTEM: MDAC ID: ITEM:	HYD/WSB 146 GN2 REGULATOR	RELIEF VALVE	
LEAD ANALYST:	J. DUVAL		en en trænstering.
ASSESSMENT:			
CRITICAL FLIGH	T	DANCY SCREENS	CIL ITEM
HDW/FU	NC A	ВС	
NASA [ 2 /1R IOA [ 2 /1R		[ P ] [ P ] [ P ] [ P ]	[ X ] * [ X ]
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* CIL RETENTION	RATIONALE: (If	applicable) ADEQUAT INADEOUAT	

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SUBSYSTE MDAC ID:	M:		148			FF	VALŬ	E									
LEAD ANA	LYST	:	J.	DUV	ΑL												
ASSESSME	NT:																
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ASSESSMENT DAT ASSESSMENT ID: NASA FMEA #:	HYDWSB-	149		BASELINE NEW	[ x ]
SUBSYSTEM: MDAC ID: ITEM:	HYD/WSB 149 GN2 SHU	TOFF VALVE			
LEAD ANALYST:	J. DUVA	L			
ASSESSMENT:					
	ALITY GHT	REDUNDANC	Y SCREENS	3	CIL ITEM
	FUNC	A	В	С	42000
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* CIL RETENTIO	N RATIONAL	E: (If app		ADEQUATE IADEQUATE	[ X ]
REMARKS: GN2 REGULATOR - REQUIRES SEC SYSTEM. NSTS	VALVE IN S COND FAILUR 22206 INDI	E TO CAUSE	POSSIBLE	E LOSS OF C	NE HYDRAULIC

ASSESSMENT DATE: ASSESSMENT ID: NASA FMEA #:	1/08/87 HYDWSB-150 06-3A-0606-4		NASA DATA BASELINE NEW	
SUBSYSTEM: MDAC ID: ITEM:	HYD/WSB 150 GN2 SHUTOFF V	ALVE		
LEAD ANALYST:	J. DUVAL			
ASSESSMENT:				
CRITICAL FLIGH		DANCY SCRE	ENS	CIL
HDW/FU		В	С	
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* CIL RETENTION	RATIONALE: (If	applicabl	e) ADEQUATE	[ <b>x</b> ]
REMARKS:			INADEQUATE	į į

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LEAD ANA	LYST	r:	J. DU	VAL									
ASSESSME	NT:												
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REMARKS: FMEA CON THEM AS	SI					& PO								SEME	L]	ES	S.	‡	<b>‡1</b> 5	52	CC	)NS	;IE	EREI

ASSESSMENT DATE: 1/08/87 ASSESSMENT ID: HYDWSB-152A NASA FMEA #: 06-3A-0615-2													ASA I BASEI		[	x	]		
SUBSYSTE MDAC ID: ITEM:	M:			HYD 152 GN2	•		, C	DISC	ONN	EC1	ŗ	-							
LEAD ANA	LYS	ST	:	J.	DUV	AL	,												
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	CRITICALITY REDUNDANCY SCREENS CIL ITEM																		
NASA IOA	[	3 2	/1R /1R	]		]	P P	]	[	F P	]	[	P P	]			X X	]	*
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SUBSYSTE MDAC ID:		HYD/W 153 GN2 V		DISCO	NNE	CT					
LEAD ANA	LYST:	J. DU	VAL								
ASSESSME	NT:										
	CRITICA FLIG HDW/F	HT	R A			SCRI	EENS	C	CI	L EM	
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SUBSYSTEM: MDAC ID: ITEM:	154	B ENT DISCO	NNECT								
LEAD ANALYST	: J. DUV	'AL									
ASSESSMENT:											
CRITICALITY REDUNDANCY SCREENS CIL FLIGHT ITEM											
HD	/FUNC	A	В	С							
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REMARKS: FMEA CONSIDER CONSIDERS THE 2.	NEA CONSIDERS CAP AND POPPET AS TWO SEPARATE ITEMS. #154 ONSIDERS THEM AS ONE. IOA CONCURS WITH FMEAS 06-3A-0614-3 AND -										

ASSESSMENT DATE: ASSESSMENT ID: NASA FMEA #:	1/28/88 HYDWSB-154A 06-3A-0614-2	NASA DATA: BASELINE [ ] NEW [ X ]										
SUBSYSTEM: MDAC ID: ITEM:	HYD/WSB 154 GN2 VENT DISCONNECT											
LEAD ANALYST:	J. DUVAL											
ASSESSMENT:												
CRITICALITY REDUNDANCY SCREENS CIL FLIGHT ITEM HDW/FUNC A B C												
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* CIL RETENTION RATIONALE: (If applicable)  ADEQUATE [ ]  INADEQUATE [ ]												
REMARKS:  FMEA CONSIDERS CAP AND POPPET AS TWO SEPARATE LINES. #154  CONSIDERS THEM AS ONE. IOA CONCURS WITH FMEAS 06-3A-0614-3 AND -2.												

ASSESSMEN ASSESSMEN NASA FMEA							NASA DATA: BASELINE [ ] NEW [ X ]								
SUBSYSTEM MDAC ID: ITEM:	<b>1</b> :		HYD/WS 155 GN2 TA		EMP	SEN	sor			-					
LEAD ANA	LYST	:	J. DUV	'AL											
ASSESSMEN	T:														
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REMARKS:										_	•	,			

ASSESSMENT DATI ASSESSMENT ID: NASA FMEA #:	E: 1/08/8 HYDWSB 06-3-0	-156		NASA DATA BASELIN NE		
SUBSYSTEM: MDAC ID: ITEM:	HYD/WS 156 GN2 TA	B NK TEMP	SENSOR			
LEAD ANALYST:	J. DUV	AL				
ASSESSMENT:						
CRITIC: FLIC		REDUND	ANCY SCRE	ENS	CIL ITEM	
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ASSESSMENT DATE: 1/08/87 ASSESSMENT ID: HYDWSB-157 NASA FMEA #: 06-3-0631-1									NASA D BASEI		[			
SUBSYSTEMDAC ID:	M:		HYD/ 157 GN2		PRES	SURE			ē rē i			= <del>3=</del>	ta wizi iri	* =-;
LEAD ANA	LYSI	<b>:</b>	J. [	UVAL										
ASSESSME	NT:											5		
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ASSESSME ASSESSME NASA FME			1	BASEI		[	]					
SUBSYSTE MDAC ID: ITEM:	M:		HYD/ 158 GN2		PRES	SURE	SENS	or				
LEAD ANA	LYS	r:	J. [	UVAL								
ASSESSME	NT:											
		TICAL FLIGH			REDUN	DANCY	SCR	EENS			CII	
		DW/FU			<b>A</b>	İ	3	(	c ·			
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REMARKS:											L	

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SUBSYSTIMDAC ID:			-	159		K PRE	SSURI	E SEN	SOR					
LEAD AN	ALY	ST	:	J.	DUVA	L								
ASSESSMI	ENT	:												
		ICAL LIGH			REENS	3		CIL						
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NASA IOA	[ [	3 3	/3 /3	]	[	NA] NA]	[	NA] NA]		NA] NA]		[	]	*
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RECOMMEN	NDA'	ΓI	ONS:		(If d	iffer	ent :	from 1	NASA)					
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**REMARKS:** 

ASSESSMENT DATE: ASSESSMENT ID: NASA FMEA #:			NASA DATA BASELINE NEW		]							
SUBSYSTEM: MDAC ID: ITEM:	HYD/WSB 160 GN2 REGULAT	OR OUT PRESSUR	E SENSOR									
LEAD ANALYST:	J. DUVAL											
ASSESSMENT:	ASSESSMENT:											
CRITICALITY REDUNDANCY SCREENS CIL ITEM												
HDW/FU	1111	-1										
NASA [ / IOA [ 3 /3	[	] *										
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* CIL RETENTION RATIONALE: (If applicable) ADEQUATE [ ] INADEQUATE [ ]												
REMARKS:	EMARKS:											
CALCULATION AND	O NASA FMEA. THIS PRESSURE IS USED IN WATER QUANTITY ALCULATION AND THE FAILURE SHOULD BE RECOGNIZED BY A FMEA WHICH NCORPORATES MDAC ID'S 160, 161, 162, & 163.											

ASSESSMENT DATE	1/08/87	-	NASA DATA: BASELINE [ ]								
ASSESSMENT ID: NASA FMEA #:	HADM2R-10	T			IEW [ X						
MDAC ID:	HYD/WSB 161 GN2 REGUL		RESSURE	SENSOR							
LEAD ANALYST:	J. DUVAL										
ASSESSMENT:											
CRITICA FLIG	LITY R	EDUNDA	NCY SCR	EENS	CII						
HDW/F		•	В	С							
NASA [ / IOA [ 3 /3	] [ N	] A]	[ ] [ NA]	[ ] [ AN ]	[	] * ]					
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* CIL RETENTION	RATIONALE:	(If a	pplicab	le) ADEQUAT INADEQUAT	E [ E [	]					
REMARKS: NO NASA FMEA.	SEE MDAC ID	#160.									

ASSESSMENT DATE:	1/08/87		A DATA:
ASSESSMENT ID: NASA FMEA #:	HYDWSB-162	BA	ASELINE [ ] NEW [ X ]
SUBSYSTEM: MDAC ID: ITEM:	HYD/WSB 162 GN2 REGULATOR	PRESSURE SENSOR	
LEAD ANALYST:	J. DUVAL	•	, agustador o trophe
ASSESSMENT:			
CRITICAL FLIGH		DANCY SCREENS	CIL ITEM
HDW/FU		в с	
NASA [ / IOA [ 3 /3	] [ ] ] [ NA]	[ ] [ NA ] [ NA ]	[ ] *
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RECOMMENDATIONS:	(If differe	nt from NASA)	
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* CIL RETENTION	RATIONALE: (If	AD:	EQUATE [ ] EQUATE [ ]
REMARKS: NO NASA FMEA. S	EEE MDAC ID #16	0.	

ASSESSMENT ID: NASA FMEA #:				NASA DAT BASELIN NE		]
SUBSYSTEM: MDAC ID: ITEM:	HYD/WS 163 GN2 RI	B EGULATOR	PRESSURE	SENSOR		
LEAD ANALYST:	J. DUY	/AL				
ASSESSMENT:						
FL]	CALITY CGHT FUNC	REDUND A	ANCY SCR B	EENS C	CII	
NASA [ /	, ] ,3 ]	[ ] [ NA]	[ ] [ AN ]	[ ] [ NA]	[	] *
COMPARE [ N /	'N ]	[ N ]	[ N ]	[ N ]	[	]
RECOMMENDATION	s: (If	differen	t from N	ASA)		
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* CIL RETENTION REMARKS:	N RATION	ALE: (If	applicab	le) ADEQUATE INADEQUATE		]
NO NASA FMEA.	SEE MDAG	C ID #160	) <b>.</b>			

ASSESSMENT DATA ASSESSMENT ID: NASA FMEA #:	E: 1/08/8 HYDWSB			NASA DA BASELI N	
SUBSYSTEM: MDAC ID: ITEM:	HYD/WS 164 GN2 FI				
LEAD ANALYST:	J. DUV	AL			
ASSESSMENT:					
CRITIC		REDUND	ANCY SCRE	ENS	CIL ITEM
	GHT FUNC	A	В	С	
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COMPARE [ N ,	N ]	[и]	[ N ]	[и]	[ N ]
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REMARKS: NO NASA FMEA SUBSYSTEM HAS FAILURE.	THIS FAI FAILURE I	LURE SHO	OULD BE RE	COGNIZED EPORT THIS	Y A FMEA. OMS AS A CREDIBLE

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SUBSYSTE MDAC ID:	M:		HYD/W 165 HYDRA		C BYP	ASS `	VALVE		The Agent is the			**, ** · ·	on satileni.
LEAD ANA	LYST	?:	J. DU	VAL	ı								
ASSESSME	NT:												
		CAL			REDUN	DANC	Y SCR	EENS	;		CIL		
	_	LIGH W/FU	~		A	,	В		C ,		TIE	rı.	
NASA IOA	[ 3	/3	]	]	NA] NA]	[ ]	NA] NA]	]	NA] NA]		]	]	*
COMPARE	[	/	)	[	]	[	]	[	]		[	]	
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	[	/	]	[	]	. [	]	[	3	(Al	[ D/D	] ELE	TE)
* CIL RE	TENT	I NOI	RATION	ALE	: (If	app	licab		ADEQU IADEQU		[ [	]	
REMARKS:										<del>-</del>		•	

ASSESSMENT DATE: ASSESSMENT ID: NASA FMEA #:			BASELINE NEW	
	HYD/WSB 166 HYDRAULIC BYPA	SS VALVE		
LEAD ANALYST:	J. DUVAL			
ASSESSMENT:				
CRITICAL FLIGH		ANCY SCRE	ens	CIL ITEM
HDW/FU		В	С	
NASA [ 2 /1R IOA [ 2 /1R	[ P ] [ P ]	[ P ] [ P ]	[ P ] [ P ]	[ X ] * [ X ]
COMPARE [ /	] [ ]	[ ]	[ ]	[ ]
RECOMMENDATIONS:	(If differen	t from NA	SA)	
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* CIL RETENTION	RATIONALE: (If	applicable	ADEQUATE	
REMARKS:			INADEQUATE	[ ]

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SUBSYSTEM MDAC ID: ITEM:	M:		HYD/W 167 HYDRA		вура	ASS V	ALVE	A C I			nt i s	ान्स- इ	-Ty
LEAD ANA	LYST	:	J. DU	VAL									
ASSESSME	NT:												
(	F	ICALI LIGHT W/FUN	נ	R: A		DANCY B	SCRE	ens C	e e e e e e e e e e e e e e e e e e e	I	IL TEN	1	
NASA IOA	[ 2	/1R /1R	]	[ P	]	[ P	]	[ P	]	[	X X	]	*
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RECOMMEN	DATI	ons:	(If	dif	fere	nt fr	om NAS	SA)					
	[	/	]		]	[	]	[	]	] ADD)	/D1	] E <b>L</b> E	TE
* CIL RE	TENT	ION F	RATION	ALE:	(If	appl	icabl	A	DEQUATI DEQUATI		x	]	
REMARKS:													

MDAC ID:	HYDWSB-168 02-6-SYSTEM- HYD/WSB 168		NASA DATA BASELINE NEW	
ITEM: LEAD ANALYST:	J. DUVAL	LIEF VALVE		
ASSESSMENT:				
CRITICALI FLIGHT HDW/FUN	ľ	UNDANCY SCRE B	ENS	CIL ITEM
NASA [ 2 /1R IOA [ 2 /1R	] [ P ] ] [ P ]	[ P ] [ P ]	[ P ] [ P ]	[ X ] *
COMPARE [ /	] [ ]	[ ]	[ ]	[ ]
RECOMMENDATIONS:	(If diffe	rent from NA	SA)	
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* CIL RETENTION I	RATIONALE: (	If applicabl	e) ADEQUATE INADEQUATE	

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SUBSYSTE MDAC ID:				16	D/WS 9 DRAI			RE	LIE	F	V.	LVE	3								
LEAD ANA	LY	ST	:	J.	יטם	VA:	L						-		-						
ASSESSME	NT	:																			
		F	ICAL LIGH	T	•			EDU	NDA			SCF	REEI		<b>a</b>				IL FEI	М	
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	1/08/87 HYDWSB-170 06-3A-0610-3		NASA DATA: BASELINE NEW	
	HYD/WSB 170 HYDRAULIC RELIE	EF VALVE		
LEAD ANALYST:	J. DUVAL			
ASSESSMENT:				
CRITICAL: FLIGHT	r	ANCY SCREE		CIL ITEM
HDW/FUI	NC A	В	С	
NASA [ 1 /1 IOA [ 3 /3	] [ NA] ] [ NA]	[ NA] [ NA]	[ NA] [ NA]	* [ X ]
COMPARE [ N /N	] [ ]	[ ]	[ ]	[ N ]
RECOMMENDATIONS:	(If different	t from NAS	A)	·
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* CIL RETENTION	RATIONALE: (If a		) ADEQUATE INADEQUATE	•
REMARKS: IOA DID NOT CONS AGREES WITH NASA	IDER EFFECTS OF ASSESSMENT.	HIGH DEMA	NDS DURING 1	ENTRY.

ASSESSMENT DATE: ASSESSMENT ID: NASA FMEA #:	1/08/87 HYDWSB-17	'1		NASA DATA BASELINE NEW		]
SUBSYSTEM: MDAC ID: ITEM:	HYD/WSB 171 HYDRAULIC	BYPASS		OTOR	-	
LEAD ANALYST:	J. DUVAL					
ASSESSMENT:						
CRITICAL		REDUNDAN	CY SCREE	NS	CIL	
FLIGH HDW/FU			В	<b>c</b> ,		M.
NASA [ / IOA [ 3 /1R	] [ F	) [	NA]	[ ] [ P ]	[	] * ]
COMPARE [ N /N	] [ N	[ ]	N ]	[ N ]	[	]
RECOMMENDATIONS:	(If dif	ferent	from NAS	A)		
[ /	] [	] [	]	[ ] <b>(</b> A)	[ <b>D</b> \ <b>D</b>	] ELETE)
* CIL RETENTION	RATIONALE:	(If ap	_	) ADEQUATE INADEQUATE	[	]
REMARKS: NO NASA FMEA. F "CAUSES" INCLUDE	MEA 03-6-0 S BYPASS V				ANDEI	D SO

	1/08/87 HYDWSB-172 06-3-0628		NASA DAT BASELIN NE	
SUBSYSTEM: MDAC ID: ITEM:	HYD/WSB 172 HYDRAULIC	BYPASS/RE	LIEF VALVE TEMP	SENSOR
LEAD ANALYST:	J. DUVAL			a en
ASSESSMENT:				
CRITICAL FLIGH		EDUNDANCY	SCREENS	CIL ITEM
HDW/FU		В	С	
NASA [ 3 /1R IOA [ 3 /1R	[ F	] [ P ] NA	] [P] ] [P]	[ X ] * [ X ]
COMPARE [ /	] [	] [ N	] [ ]	[ ]
RECOMMENDATIONS:	(If dif	ferent fro	m NASA)	
[ /	] [	] [ NA	] [ ]	[ ] ADD/DELETE)
* CIL RETENTION	RATIONALE:	(If appli	cable) ADEQUATE INADEQUATE	
REMARKS: SCREEN B IS NOT	APPLICABLE	TO STANDB	Y REDUNDANCY.	

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SUBSYSTEM: MDAC ID: ITEM:		HYD/WS 173 HYDRAU		BYPAS	SS/RELIEF	VALVE T	EMP SENSOR
LEAD ANALY	/ST:	J. DUV	'AL				
ASSESSMENT	r:						
CF	RITICAL FLIGH		RE	DUND	ANCY SCRE	ENS	CIL ITEM
	HDW/FU		A		В	С	11111
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* CIL RETE	ENTION	RATIONA	LE:	(If	applicabl	e) ADEQU INADEQU	
REMARKS: SCREEN B	S NOT	APPLICA	BLE	TO S	TANDBY RE	DUNDANCY	•

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_	LEAD ANA	LYS	r:	J.	שמ	/AI	<u>,</u>														
	ASSESSME	NT:																			
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SUBSYSTEM MDAC ID: ITEM:	í:		HYD/W 175 CB	SB								
LEAD ANAI	LYST	:	J. DU	VAL								
ASSESSMEN	T:											
C			ITY	F	REDUN	DANCY S	CREENS	3		CII		
		LIGH W/FU		A		В		C		IŢ	iΜ	
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REMARKS: SCREEN B	NOT	APP	LICABL	E FC	R ST	ANDBY F	EDUNDA	NCY.				

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SUBSYSTE MDAC ID:	M:			HYD, 176 BY-		RE	LAY								
LEAD ANA	LYS	ST:	:	J.	DUVA	L									
ASSESSME	NT:	:											-	-	
		FI	LIGH		F-2		DUN	DANC		CREEN		-	CI		
	F	IDV	V/FU	JNC		A			В		С				
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ASSESSM	ENT	:																					
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* CIL R	ETE	NT:	10	N I	RAT	IONA	LI	Ξ:	(1	f	apj	<b>91</b> :	ica	ble	•		EQU EQU				x		
REMARKS SCREEN CONTACT CONTACT CONTROL	B No S FO	OR N S	o S <b>W</b>	NE IT	SW CH	ITCH FAII	I I EI	205	II (I.	ON E.	F/	AII CAI	LEC	). T TC	NA GC	ASA GLE	AS SW	SUM ITC	ED H	A TO	LL )		Œ.

ASSESSMENT DATE: ASSESSMENT ID: NASA FMEA #:	1/08/87 HYDWSB-1 05-6WA-2	.78 051-1		NASA DATA BASELINE NEW	
SUBSYSTEM: MDAC ID: ITEM:	178	CONTROL P	OWER/HEAT	ER SW	
LEAD ANALYST:	J. DUVAL	ı			
ASSESSMENT:					
CRITICAL FLIGH		REDUNDAN	CY SCREEN	S	CIL ITEM
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COMPARE [ N /	] [	] [	и][	]	[ N ]
RECOMMENDATIONS:	(If di	fferent	from NASA	<b>y</b>	
[ /	] [	) [	NA] [	] (A)	[ ] DD/DELETE)
* CIL RETENTION	RATIONALE	: (If ap	plicable) I	ADEQUATE NADEQUATE	[ x ]
REMARKS: SCREEN B IS NOT IOA ASSUMED CONT ASSUMED ALL CONT TO CONTROLLER "A	ACTS FOR ACTS IN S	ONE SWIT	CH POSITI	ON FAILED ., CAN'T T	OGGLE SWITCH

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SUBSYSTI MDAC ID: ITEM:				HYD/V 179 BOIL		ITRL	SW									
LEAD ANA	ALYS	ST:	:	J. D	JVAL											
ASSESSMI	ENT :	:														
	CRI		CAL:	ITY	F	REDUN	DAN	CY	SCR	EENS	3			CIL		
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COMPARE	[		/	]	[	]	[	N	]	[		]		[	]	
RECOMMEN	VDA'	CIC	ONS:	<b>(</b> I:	f di	fere	nt	fr	om N	ASA)	)					
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ASSESSMENT DATE: ASSESSMENT ID: NASA FMEA #:	1/08/87 HYDWSB-180 05-6WA-205		NASA D BASEL	
SUBSYSTEM: MDAC ID: ITEM:	HYD/WSB 180 BOILER CNT	RL SW		-
LEAD ANALYST:	J. DUVAL			
ASSESSMENT:				
CRITICAI FLIGH		EDUNDANCY	SCREENS	CIL ITEM
HDW/FU		В	С	
NASA [ 2 /1F IOA [ 2 /1F		] [ P ] [ NA	] [ P ] ] [ P ]	[ X ] *
COMPARE [ /	] [	] [ N	] [ ]	[ ]
RECOMMENDATIONS:	(If diff	erent fro	m NASA)	<u>.</u>
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* CIL RETENTION	RATIONALE:	(If appli	cable) ADEQUA INADEQUA	

**REMARKS:** 

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SUBSYSTE MDAC ID: ITEM:			HYD, 181 RES	/WSB ISTOR-	CURI	RENT 1	LIMIT	'ER (5	5.1K,	3/4	W)	
LEAD ANA	LYS	T:	J. 1	DUVAL								
ASSESSME	NT:										و کا	.7 <u>8 :24 .</u>
21	,, ,,-,-,	TICAL FLIGH	T	R		NDANC'	y scr B		3		CII	
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SUBSYSTE MDAC ID:	M:		HYD/ 182 RESI		-VOLT	AGE I	DIVID	ER (	12K, 1,	/4W)			
LEAD ANA	LYST:	;	J. D	UVAL									
ASSESSME	NT:												
	CRITI FI	CAL		1	REDUN	DANC	Y SCR	EENS			CI:		
	HDW	/FU	NC	1	A	]	В		C				
NASA IOA	[ 3 [ 3	/3 /3	]	[ ] [ ]	NA] NA]	[ ]	NA] NA]	[	NA] NA]		[	]	*
COMPARE	[	/	]	[	]	[	3	[	]		[	]	
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SUBSYSTEM MDAC ID:	M:		HYD/W 183 RESIS		-c	URRE	NT	L	(MITE	R							
LEAD ANA	LYST	:	J. DU	VAL													
ASSESSME	NT:																
C	F	ICAL: LIGH! W/FUI	r			DUND	AN	CY B	SCRE	ENS	s c			CI	L EM	I	
NASA IOA		/1R /1R	]	[ ]	P P	]	[	P NA	]	[	P P	]		[ [		]	*
COMPARE	[	/	]	[		]	[	N	1	[		1		[		]	
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SUBSYSTE MDAC ID: ITEM:	M:		HYD/WS 183 RESIST		CURRI	ENT I	LIMITE	R				
LEAD ANA	LYST:		J. DUV	VAL								
ASSESSME	NT:											
	CRITIC	CALI IGHT		R	EDUNI	DANCY	SCRE	ENS			CII	
	HDW,			A		E	3	(	2			
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SUBSYSTE MDAC ID: ITEM:	M:		18	YD/WS 84 DILER		2 SUI	PPLY	sv	- I					- : : : : :	
LEAD ANA	LYS	T:	J	. DUV	'AL										
ASSESSME	NT:													E ment	
		TICA FLIC	HT	¥	I 2	REDUI	NDAN	CY B	SCRI		c .		CI		
NASA IOA		•			[ ]	? ] ? ]	[	P NA	]	]	P ]		[	]	*
COMPARE	[	/	]		[	]	[	N	]	[	]		[	]	
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* CIL RE	TEN	TION	RA	TIONA	LE:	(11	f ap	pli	.cab]			UATE UATE	[ [	]	

A	ASSESSMENT DATE: 1/08/87 ASSESSMENT ID: HYDWSB-185 NASA FMEA #: 05-6W-2055-1 SUBSYSTEM: HYD/WSB													SA DA BASELI N		[	x ]			
M	SUBSYSTE SDAC ID: TEM:				18	5		12	SUPE	ьГА	SW	Ţ								
I	LEAD ANA	ALYS	ST	:	J.	שמע	/AI													
A	ASSESSME	ENT	:																	
	CRITICALITY REDU FLIGHT									AN	CY	SC	REEN	3			CI	L EM		
		NC L	-		A			В			С									
	NASA IOA	[	3	/1R /1R	]		[	P P	]	[ [	P NA	]	]	P P	]		[	]	*	
C	COMPARE	[		/	]		[		]	[	N	]	1		]		[	]		
F	RECOMME	NDA!	ric	ons:		(If	đi	ifi	ferer	nt :	fro	om 1	NASA	)						
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F	REMARKS	•																		

ASSESSME	ASSESSMENT DATE: 1/08/ ASSESSMENT ID: HYDWS NASA FMEA #: 05-6V					A				ASA D BASEL		[	x ]	
SUBSYSTEM MDAC ID:	M:		HYD/W 186 HYBRI		RIVE	R CI	RCUI	T						
LEAD ANA	LYS	r:	J. DU	VAL										
ASSESSME	NT:													
•		rical:		I	REDUI	NDAN(	CY S	CREEN	s			CI		
	_	FLIGHT OW/FU		1	A		В		C				<u>G</u> M	
	HDW/FUNC NASA [ 3 /1R ] IOA [ 3 /1R ]					[	P ] NA]	[	P P	]		[ [	]	*
COMPARE	[	/	1	[	]	[	N ]			]		[	]	
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	(	/	]	[	J	[	NA]	[		]	(Al	[ DD/	DEL:	ETE)
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REMARKS:	ИO	r APP	LTCABL	E F(	OR S'	TAND	BY R	REDUNI	ANO	CY.				

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SUBSYSTE MDAC ID:	M:		HYD/W 186 HYBRI		IVER	CI	RCUIT						
LEAD ANA	LYST	<b>:</b>	J. DU	VAL									
ASSESSME	NT:												
		'ICALI 'LIGH'I		R	EDUN	DAN	CY SCI	REÈNS	3		CI IT		
		W/FUN		A	,		В		С		11	ch.	
NASA IOA	[ 3	/1R /1R	]	[ P	]	[	P ] NA]	]	P ] P ]		[	]	*
COMPARE	[	/	]	[	]	[	n j	[	]		[	]	
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* CIL RES	PENT:	ION R	RATION	ALE:	(If	apj	plicab		ADEQUA ADEQUA		[	]	
REMARKS:						_				_	٠	,	

SCREEN B NOT APPLICABLE FOR STANDBY REDUNDANCY.

ASSESSME	" -				7 8-1D	ı		1		DATA: ELINE NEW	[		=
SUBSYSTEMDAC ID:	M:		HYD/ 187 HYBR	WSB	IVER	CIR	CUIT						
LEAD ANA	LYST	:	J. D	UVAL							. : <del>-</del>	-,	:.1
ASSESSME	NT:												
,			ITY	R	EDUN	DANC	Y SCR	EENS			CI		
		LIGH W/FU	NC	A			В		С			<b>DI</b> 1	
NASA IOA	[ 3	/3 /3	]	[ N	A]	[	NA] NA]	[	NA] NA]		[	]	*
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* CIL RE	TENT	ION	RATIO	NALE:	(If	app	licab			JATE JATE	[	]	
REMARKS:	MOT	ממג י	T T C A B	מדי פרו	ים פיד	מחמגי	V PED			····	L	1	

ASSESSMENT ASSESSMENT NASA FMEA #	ID:		B-18			NASA BASE	LINE		]
SUBSYSTEM: MDAC ID: ITEM:	٠	HYD/W 188 RPC	SB						
LEAD ANALYS	ST:	J. DU	VAL			-			
ASSESSMENT:	:								
CRI	TICAL FLIGH		R	EDUN	DANCY SCR	EENS		CIL	ч
F	IDW/FU		A		В	С			•
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COMPARE [	/	]	[	]	[ N ]	[ ]		(	]
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Ţ	/	]	[	]	[ NA]	[ ]	(AI	[ DD/DI	] ELETE)
* CIL RETEN	NTION	RATION	ALE:	(If	applicab	le) ADEQU INADEQU		[	]
REMARKS: SCREEN B NO	OT APP	LICABL	E FO	R ST	ANDBY RED	JNDANCY.			

ASSESSME ASSESSME NASA FME	08/8 0WSB -6W-	-18								DATA: LINE NEW	[	x	]					
SUBSYSTEM MDAC ID: ITEM:	M:		HYD 189 RPC		В													
LEAD ANA	LYST	:	J.	DUV	AL													
ASSESSME	NT:																	
•		ICALI LIGHT			F	REDU	NDANG	CY	SCRE	ENS	5			CI	L EM	7		
		W/FUN			A			В			С				EF	L		
NASA IOA	[ 3	/1R /3	]		[ ]	P] [A]	[	F NA	]	[	P NA	]		[	X	]	*	
COMPARE	[	/N	]	-	[ ]	ij	[	N	]	[	N	]		[	N	]		
RECOMMEN	DATI	ons:	(	[If	dif	fer	ent f	fro	om NA	SA)	)							
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* CIL RE	rent:	ION F	RATI	ONA	LE:	(I	f apr	oli	.cabl			EQUA EQUA	TE TE	Ţ	x	]		
REMARKS: THERMOSTA CONCURS V CREDIBLE	HTIW																	

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LEAD ANA	LYS	ST	:	J.	יטם	/A]	L													
ASSESSME	ENT:	:																		
	CRI		[CAL]				RI	EDU	NDA	N	CY	SC	REEN	s			CI	L EM	į	
	HDW/FUNC A										В			C						
NASA IOA	[ [		/1R /1R			[	P P	]		[ [	P NA	]	[	P P	]		[		]	*
COMPARE	[		/	]		[		]		[	N	3	[		]		[		]	
RECOMMEN	IDAT	ΓIO	ONS:		(If	đ:	if	fer	ent	: -· 1	fro	m I	NASA	)		8 · · ' <u>E</u>	1 ger / 1			1
	[		/	]				]		[	NA	.]	[		]	(A	] \DD/	'DE	] LE	TE
* CIL RE		VT.	ION I	RAT	IONA	λL	E:	(I	f a	ΡĮ	oli	.ca				UATE UATE	[		]	
SCREEN I		тс	APP	LIC	ABLI	<b>E</b> ]	FOI	R S	TAN	DI	вч	RE	DUND	AN	CY.					

ASSESSME		DATE:	1/08	3/87					NASA I			<del>-</del> 1-	
ASSESSME NASA FME				WSB-19 6W-229					DASEI	NEW	-	x ]	
SUBSYSTEMDAC ID:	M:		HYD, 191 ISO	/WSB LATIO	N DIC	DE			# 1 PT				
LEAD ANA	LYS!	r:	<b>J.</b> 1	DUVAL									
ASSESSME	NT:												
(		TICAL FLIGH		]	REDUN	IDANC	Y SCR	EENS	;		CI IT	L EM	
nu min		DW/FU		2	<b>A</b>		<b>B</b>		C	s, cr			
NASA IOA	[ :	3 /3 3 /3	]	[ ] [ ]	NA] NA]	]	NA] NA]	[	NA] NA]		[	]	*
COMPARE	[	/	]	[	]	[	]	Ţ	]		[	]	
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	[	1.	]	[	]	[	]	[	]	(Al	[ DD/	DEL	ETE
* CIL RE	TEN'	TION	RATI(	ONALE	: (If	app	licab		ADEQUA		[	]	
REMARKS:													

ASSESSMENT DATE: ASSESSMENT ID: NASA FMEA #:	HYDWSB-191A		BASELINE NEW	
	HYD/WSB 191 ISOLATION DIODE			
LEAD ANALYST:	J. DUVAL			
ASSESSMENT:				
CRITICAL FLIGH		NCY SCREEN	S	CIL ITEM
HDW/FU		В	С	
NASA [ 3 /3 IOA [ 3 /3	] [ NA] ] [ NA]	[ NA] [ [ NA] [	NA] NA]	[ ] *
COMPARE [ /	] [ ]	[ ] [	]	[ ]
RECOMMENDATIONS:	(If different	from NASA	)	
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* CIL RETENTION	RATIONALE: (If a		ADEQUATE NADEQUATE	[ ]
REMARKS:				

ASSESSMENT DATE: ASSESSMENT ID: NASA FMEA #:	1/08/87 HYDWSB-192 06-3-0611-1	N	BASELINE NEW	
SUBSYSTEM: MDAC ID: ITEM:	HYD/WSB 192 CONTROLLER A			
LEAD ANALYST:	J. DUVAL			
ASSESSMENT:				
CRITICAL		ANCY SCREENS		CIL ITEM
FLIGH HDW/FU		B C	e e e e e e e e e e e e e e e e e e e	
NASA [ 3 /1R IOA [ 3 /1R	] [ P ] ] [ P ]	[ P ] [ F ] [ NA]	? ]	[ ] *
COMPARE [ /	] [ ]	[и] [	]	[ ]
RECOMMENDATIONS:	(If differen	t from NASA)		
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* CIL RETENTION	RATIONALE: (If		ADEQUATE ADEQUATE	[ ]
REMARKS: SCREEN B NOT APP	LICABLE FOR STA	NDBY REDUNDAN	ICY.	

ASSESSMENT DATE: ASSESSMENT ID: NASA FMEA #:	1/08/87 HYDWSB-19: 06-3-0611			NASA DAT BASELIN NE	<b>E</b> [	]
SUBSYSTEM: MDAC ID: ITEM:	HYD/WSB 193 CONTROLLE	R A				
LEAD ANALYST:	J. DUVAL					
ASSESSMENT:						
CRITICAL FLIGH		EDUNDAN	CY SCRE	ENS	CIL	-
HDW/FU			В	C		
NASA [ 3 /1R IOA [ 3 /1R		] [	P ] NA]	[ P ]	[	*
COMPARE [ /	] [	] [	N ]	[ ]	[	]
RECOMMENDATIONS:	(If dif	ferent	from NA	SA)	. <b></b>	푸- 주국, -
$\omega = \omega_{a}\omega_{a}(\boldsymbol{t}_{a})/\boldsymbol{z}$	] [	] [	NA]	[ ]	[ ADD/D	] ELETE)
* CIL RETENTION REMARKS:	RATIONALE:	(If ap	oplicable	e) ADEQUATE INADEQUATE		]
FMEA 06-3-0611-2	WAS COMBI	NED WIT	'H 06-3-	0611-1.		:

ASSESSME	ASSESSMENT DATE: 1/08/8' ASSESSMENT ID: HYDWSB- NASA FMEA #: 06-3-06 SUBSYSTEM: HYD/WSI							ATA: INE [ NEW [ X	]
SUBSYSTEM MDAC ID:	M:		19	•	ER B	:	गणको हैस्यान -		geller de lege
LEAD ANA	LYS'	r:	J.	DUVAL	1				
ASSESSME	NT:								
			LITY		REDUN	DANCY SCR	EENS	CIL	
		FLIG DW/F			A	В	C	:	
NASA IOA	HDW/FUNC NASA [ 3 /1R ] IOA [ 3 /1R ]				P ] P ]	[ P ] [ NA]	[ P ] [ P ]	] [	] <b>*</b>
COMPARE	[	/	]	[	]	[ N ]	[ ]	[	]
RECOMMEN	DAT:	IONS	:	(If di	ffere	ent from N	ASA)		
	[	/	)	[	]	[ NA]	[ ]	[ (ADD/D	] ELETE)
	TEN'	rion	RAT:	IONALE	: (If	applicab	le) ADEQUA INADEQUA		]
REMARKS: SCREEN B	NO	r af	PLIC	ABLE F	OR SI	ANDBY RED	UNDANCY.		

ASSESSMI ASSESSMI NASA FMI	ENT	ĮĮ	):	HY	DWSB-195 -3-0612-1									DA ELI N		[		]			
SUBSYSTEMDAC ID				19	D/WS 5 NTRC		LEF	₹ В			-										
LEAD AN	ALYS	T:	:	J.	DUV	'Al	۲														
ASSESSM	ENT:																				
	CRI		CAL:				RI	EDUNI	AN	C	Z	SCRI	EENS	5				CI I'l	IL EN	1	
	H		V/FU				A			I	3			C							
NASA IOA	]	3 3	/1R /1R	]		]	P P	]	[	1	P NA	]	]	P P	]			[		]	*
COMPARE	[		/	]		[		]	(	1	1	]	[		]			[		]	
RECOMME	NDAI	ľIC	ons:		(If	đ:	ifí	erer	nt	fı	ro	m N	ASA	)							
i i fund	[		/	]		[		1	(	1	A	.]			]		(Al	[ /QC	/DI	] ELI	ETE)
* CIL R		T	ION :	RAT	IONA	L	Ε:	(If	aŗ	g.	li	.cab:				LAU LAU		[		]	
REMARKS FMEA 06		)61	12-2	WA	s co	M	BI	VED V	riw	Н	0	6-3	-06	12	-1.						

ASSESSMENT DATE: ASSESSMENT ID: NASA FMEA #:	1/08/87 HYDWSB-1	196		NASA DATA: BASELINE NEW	
SUBSYSTEM: MDAC ID: ITEM:	HYD/WSB 196 HYBRID [		CIRCUIT (CO	ONTROLLER)	
LEAD ANALYST:	J. DUVAI	Ľ			
ASSESSMENT:					
CRITICAL	CIL ITEM				
FLIGHT HDW/FU		A	В	C	TIEM
NASA [ / IOA [ 2 /1R	] [	p ]	[ ] [ [ NA ]	] P ]	[ x ] *
COMPARE [ N /N	] [	N ]	[ N ]	[ N ]	[ N ]
RECOMMENDATIONS:	(If d	ifferent	from NASA	٧)	
[ /	] [	1	[ ]	[ ] (AD	[ ] D/DELETE)
* CIL RETENTION	RATIONALI	E: (If a		ADEQUATE INADEQUATE	
REMARKS: HYDWSB-196 IS A	SUBSET O	F 192 Al		-	

ASSESSMENT DATE: ASSESSMENT ID: NASA FMEA #:	1/08/87 HYDWSB-197	NASA DATA BASELINI NEV	E [ X ]				
SUBSYSTEM: MDAC ID: ITEM:	HYD/WSB 197 HYBRID DRIVER CI	IRCUIT (CONTROLLER)					
LEAD ANALYST:	J. DUVAL						
ASSESSMENT:							
CRITICAI FLIGH	· <del>-</del>	NCY SCREENS	CIL ITEM				
HDW/FU		В С					
NASA [ / IOA [ 3 /1F	] [ ]	[ ] [ ] [ NA] [ P ]	[ ] *				
COMPARE [ N /N	] [N]	[и] [и]	נ ז				
RECOMMENDATIONS:	(If different	from NASA)					
	[P]	[P] [P] (	[ A ] ADD/DELETE)				
* CIL RETENTION	RATIONALE: (If a	pplicable) ADEQUATE INADEQUATE					
REMARKS: THIS FAILURE HAS BE RECOGNIZED BY		AS FMEA 05-6WA-205	, ,				

ASSESSMENT DATE: ASSESSMENT ID: NASA FMEA #:	1/08/87 HYDWSB-40 02-6-E24-	)1 -1		NASA DATA BASELINE NEW			
MDAC ID:	HYD/WSB 401 ACCUMULAT	OR					
LEAD ANALYST:	W. DAVIDS	ON					
ASSESSMENT:							
CRITICAL: FLIGHT	TY R	REDUNDANC	Y SCREEN	S	CIL ITEM		
	ic a		В	С			
NASA [ 2 /1R IOA [ 3 /1R	] [ P		P ] [ P ] [	P ] P ]	[ X ] * [ ]		
COMPARE [ N /	] [	] [	] [	]	[ N ]		
RECOMMENDATIONS:	(If dif	ferent f	rom NASA	)			
\ ]	] [	) [	] [	] (AI	[ ] DD/DELETE)		
* CIL RETENTION I	RATIONALE:	(If app		ADEQUATE NADEQUATE	[ X ]		
REMARKS: FMEA 02-6-E24-1 INCORPORATES MDAC ID'S 401 AND 412. NASA CRITICALITY REFLECTS WORST CASE SCENARIO, I.E., INSTANTANEOUS LOSS OF GN2 PRESSURE. CREW GETS SM ALERT IF ACCUM. GN2 PRESSURE DROPS BELOW 1900 PSIA CIRC PUMP SWITCHES ARE PLACED IN "GPC" POSITION APPROXIMATELY 2 L/2 HOURS INTO MISSION. THIS ACTIVATES SOFTWARE THAT WILL AUTOMATICALLY TURN ON CIRC PUMP IF ACCUM. GN2 PRESSURE DROPS BELOW 1960 PSIA.							

ASSESSMENT DATE: ASSESSMENT ID: NASA FMEA #:	1/08/87 HYDWSB-402 02-6-SYSTEM-	·2		: [ x ]
	HYD/WSB 402 ACCUMULATOR			1
LEAD ANALYST:	W. DAVIDSON			
ASSESSMENT:				
CRITICAL FLIGH HDW/FU	T	UNDANCY SCREE	ns C	CIL
NASA [ 2 /1R IOA [ 2 /1R	] [P]	[ P ] [ P ]	[ P ]	[ X ] *
COMPARE [ /	] [ ]	[ ]	[ ]	[ ]
RECOMMENDATIONS:	(If differ	ent from NAS	A)	**************************************
	] [ ]	[ ]	[ ] (A)	[ ] DD/DELETE
* CIL RETENTION REMARKS:	RATIONALE: (1		) ADEQUATE INADEQUATE	[ x ]

ASSESSMENT DATE: ASSESSMENT ID: NASA FMEA #:				NASA DATA BASELINE NEW	
SUBSYSTEM: MDAC ID: ITEM:	HYD/WSB 403 ACCUMULAT	or	£1		t verter in a sta
LEAD ANALYST:	W. DAVIDS	ON			
ASSESSMENT:					
CRITICAL FLIGH HDW/FU	T	edundancy B		rs C	CIL ITEM
NASA [ 2 /1R IOA [ 2 /1R		] [ P		P ] P ]	[ X ] *
COMPARE [ /	] [	] [	) [	]	[ ]
RECOMMENDATIONS:	(If dif	ferent fr	om NASA	<b>v</b> )	
[ /	] [	] [	] [	[ ] (Ä	[ ] DD/DELETE)
* CIL RETENTION	RATIONALE:	(If appl		ADEQUATE NADEQUATE	[ x ]
REMARKS:					

ASSESSMENT DATE ASSESSMENT ID: NASA FMEA #:	: 1/08/87 HYDWSB-404	NASA DA' BASELII N				
SUBSYSTEM: MDAC ID: ITEM:	HYD/WSB 404 ACCUMULATOR	404				
LEAD ANALYST:	W. DAVIDSON					
ASSESSMENT:						
CRITICA FLIG	CIL ITEM					
HDW/F		в с	TIEM			
NASA [ / IOA [ 2 /1	R ] [ P ]	[ ] [ ] [ F ] [ P ]	[ x ] *			
COMPARE [ N /N	] [ N ]	[и] [и]	[и]			
RECOMMENDATIONS	: (If differer	nt from NASA)	s una nese y ingin.			
[ /	] [ ]	[ ] [ ]	[ ] (ADD/DELETE)			
* CIL RETENTION RATIONALE: (If applicable)  ADEQUATE [ ] INADEQUATE [ ]						
REMARKS: THIS FAILURE SHOTELIGHT.	OULD BE DELETED.	. IT IS NOT A CREDI	BLE FAILURE IN			

ASSESSME ASSESSME NASA FME	NT I	D:	HYD	8/87 WSB-4 6-E24		NASA DATA BASELINE NEW						] [ ]	
SUBSYSTEMDAC ID:	M:		HYD, 405 PRE		GAGE	2			,				S :
LEAD ANA	LYST	:	<b>W.</b> 1	DAVID	SON								
ASSESSME	NT:												
CRITICALITY REDUNDA FLIGHT						IDANC	Y SCF	REENS	5		CII		
	_	W/FU			A		В		<b>C</b>			4	
NASA IOA	[ 3 [ 3	/3 /3	]	]	NA] NA]	[	NA] NA]	]	NA] NA]		[	]	*
COMPARE	[	/	]	[	]	[	]	Ţ	]		[	]	
RECOMMEN	DATI	ons:	(	If di	ffere	ent f	rom N	IASA)					
	[	/	]	C	]	[	]	[	1 .	(A	[ DD/I	) ELE	TE)
* CIL RE	TENT	NOI	RATI(	ONALE	: (If	app	licab		ADEQUA IADEQUA		[	]	
REMARKS:	6_F2	1 - 1	TNCO	D D O D A	ጥፑር እ	(D)	TDIS	405	AND 4	16.			

ASSESSMENT DATE: ASSESSMENT ID: NASA FMEA #:	•		NASA DATA: BASELINE [ ] NEW [ X ]					
SUBSYSTEM: MDAC ID: ITEM:	HYD/WSB 406 PRESSURE GAG	E						
LEAD ANALYST:	LEAD ANALYST: W. DAVIDSON							
ASSESSMENT:								
CRITICAL FLIGH		NDANCY SCRE	ENS	CIL ITEM				
HDW/FU		В	С					
NASA [ 3 /3 IOA [ 3 /3	] [ NA] ] [ NA]	[ NA] [ NA]	[ NA] [ NA]	[ ] *				
COMPARE [ /	] [ ]	[ ]	[ ]	[ ]				
RECOMMENDATIONS:	(If differ	ent from NA	SA)					
[ /	] [ ]	[ ]	[ ]	[ ADD/DELETE)				
* CIL RETENTION	RATIONALE: (I	f applicabl	e) ADEQUATE INADEQUATE					
REMARKS: FMEA 02-6-E24-4	INCORPORATES	MDAC ID'S 4	05 AND 406.					

ASSESSMENT DATE: ASSESSMENT ID: NASA FMEA #:	1/08/87 HYDWSB-	407	NASA DATA: BASELINE [ ] NEW [ X ]						
	HYD/WSB 407 RELIEF	VALVE							
LEAD ANALYST:	W. DAVI	DSON							
ASSESSMENT:									
CRITICAL		REDUNDA	NCY SCREE	NS	CIL				
FLIGH HDW/FU		A	В	<b>C</b>	ITEM				
NASA [ / IOA [ 3 /3	] [	NA]	[ ] [ NA]	[ ] [ NA]	[ ] *				
COMPARE [ N /N	] [	и ј	[и]	[и]	[ ]				
RECOMMENDATIONS:	(If d	ifferent	from NAS	A)					
[ 3 /3	] [	NA]	[ NA]	[ NA] . (AI	[ ] OD/DELETE)				
* CIL RETENTION	RATIONAL	E: (If a		) ADEQUATE INADEQUATE					
REMARKS: IOA RECOMMENDS A	FMEA BE	PREPARE		-	FAILURE.				

ASSESSMENT DATE: ASSESSMENT ID: NASA FMEA #:	1/08/87 HYDWSB-408		BASELINE [ ] NEW [ X ]					
SUBSYSTEM: MDAC ID: ITEM:	HYD/WSB 408 RELIEF VALV	E						
LEAD ANALYST:	W. DAVIDSON							
ASSESSMENT:								
CRITICAI FLIGH		UNDANCY SCREE	NS	CIL ITEM				
HDW/FU		В	C					
NASA [ / IOA [ 3 /3	] [ ] ] [ NA]	[ ] [ NA]	[ ] [ NA]	[ ] *				
COMPARE [ N /N	] [N]	[ N ]	[и]	[ ]				
RECOMMENDATIONS:	(If diffe	rent from NAS	<b>A</b> )	e in rendescus. The				
[ /	] [ ]	[ ]	[ ] (A	[ DD/DELETE				
* CIL RETENTION	RATIONALE: (		) ADEQUATE INADEQUATE	[ ]				
REMARKS: THIS FAILURE IS	NOT SUFFICIE	NTLY SIGNIFIC	ANT TO NEED	A FMEA.				

ASSESSMENT DATI ASSESSMENT ID: NASA FMEA #:	: 1/08/87 HYDWSB-409	NASA DAT BASELIN NE	E [ ]				
SUBSYSTEM: MDAC ID: ITEM:	HYD/WSB 409 GN2 PRESSURE	TRANSDUCER	en e				
LEAD ANALYST:	W. DAVIDSON						
ASSESSMENT:							
FT.T	ਸਾ	DANCY SCREENS	ITEM				
HDW/I	TUNC A	B					
		[ ] [ ] [ AN ] [ AN ]					
COMPARE [ N /	] [N]	[и] [и]	[ ]				
RECOMMENDATIONS	: (If differe	ent from NASA)					
[ 3 /	] [ NA]	[ NA ] [ NA ] (	[ ] ADD/DELETE)				
* CIL RETENTION	RATIONALE: (If	applicable) ADEQUATE INADEQUATE	[ ]				
REMARKS: THERE IS NO NASA FMEA ADDRESSING ACCUMULATOR GN2 PRESSURE TRANSDUCER FAILURES. A FMEA SHOULD BE PREPARED COVERING THESE TRANSDUCERS SIMILAR TO FMEA 02-6-A16-4 FOR SSME ACCUMULATORS. THIS NEW FMEA SHOULD INCORPORATE MDAC ID'S 409, 410 AND 411 IN THE SAME MANNER THAT FMEA 02-6-A16-4 INCORPORATES MDAC ID'S 421, 422, AND 423. GN2 PRESSURES ARE MONITORED BY C&W SYSTEM AND ACCUM. PRESSURE CONTROL SOFTWARE.							

ASSESSMENT DATE: ASSESSMENT ID: NASA FMEA #:	1/08/87 HYDWSB-410		NASA DATA: BASELINE [ NEW [	
	HYD/WSB 410 GN2 PRESSURE T	RANSDUCER		
LEAD ANALYST:	W. DAVIDSON			
ASSESSMENT:				
CRITICAI FLIGH HDW/FU		ANCY SCRE		CIL TEM
NASA [ / IOA [ 3 /3	] [ NA]		• •	] *
COMPARE [ N /N	] [N]	[ N ]	[ N ]	]
RECOMMENDATIONS:	(If differen	t from NA	SA)	
[ /	. [ ]	[ ]	[ ] [ [ADE	] D/DELETE)
* CIL RETENTION	RATIONALE: (If	applicabl	e) ADEQUATE [ INADEQUATE [	]
REMARKS: THERE IS NO NASA TRANSDUCER FAILU TRANSDUCERS SIMI THIS NEW FMEA SH THE SAME MANNER 422, AND 423. GN2 PRESSURES AF CONTROL SOFTWARE	TRES. A FMEA SHELAR TO FMEA 02- HOULD INCORPORATE THAT FMEA 02-6- RE MONITORED BY	OULD BE P 6-A16-4 F E MDAC ID A16-4 INC	ATOR GN2 PRESS REPARED COVERI OR SSME ACCUMU 'S 409, 410 AN ORPORATES MDAC	URE NG THESE LATORS. D 411 IN : ID'S 421

ASSESSMENT DATE: ASSESSMENT ID: NASA FMEA #:				1/0 HYD	8/87 WSB-4	111		NASA DATA: BASELINE [ ] NEW [ X ]					
SUBSYSTIMDAC ID				411		SSURE	TRANS	DUCI	ER				
LEAD AN	ALYS	ST	:	W.	DAVII	OSON							
ASSESSM	ENT	:										-	-
,		F	LIGH	T				SCI	REENS		CII ITE		
	]	HDI	W/FU	NC _		A	В		С				
NASA IOA	[	3	/3	]	[	NA]	[ [ N	] <b>A</b> ]	[ [ NZ	]	[	]	*
COMPARE	[	N	/N	]	(	N ]	[ N	]	[ 11	]	[	]	
RECOMME	NDA'	ri(	ons:	(	If d	iffere	nt fr	om 1	NASA)				
	[		!	1	[	]	[	]	[	] (2	[ ADD/E	] ELE	ETE)
* CIL R	ותיים	ידיא	TON	RATT	ONAL	E: (If	appl	ical	ole)				
						<b>\</b>			Δľ	DEQUATE DEQUATE	[	]	
REMARKS THERE I TRANSDUTHIS NETHE SAM 422, AN GN2 PRE CONTROL	S NO CER CER: W FI E M. D 4: SSU:	F. ME. AN 23 RE	AILU SIMI A SH NER •	RES. LAR OULD THAT	TO FI	FMEA S MEA 02 ORPORA A 02-6	HOULD -6-A1 TE MD -A16-	BE 6-4 AC :	PREPAI FOR SS ID'S 40 NCORPOI	RED COVE SME ACCU 19, 410 RATES MI	ERING JMULA AND DAC I	TH TOF 411 D'S	RS. L IN S 421,

ASSESSMENT DATE: ASSESSMENT ID: NASA FMEA #:	HYDWSB-412		NASA DATA: BASELINE [ ] NEW [ X ]					
SUBSYSTEM: MDAC ID: ITEM:	HYD/WSB 412 GN2 FILL VA	LVE						
LEAD ANALYST:	W. DAVIDSON			# 2 <del>*</del> " .				
ASSESSMENT:								
CRITICAL FLIGH		OUNDANCY SCRE	ENS	CIL ITEM				
	NC A	В	С					
NASA [ 2 /1R IOA [ 3 /1R	] [ P ]	[ P ] [ P ]	[ P ] [ P ]	[ X ] * [ ]				
COMPARE [ N /	] [ ]	[ ]	[ ]	[ N ]				
RECOMMENDATIONS:	(If diffe	erent from NA	ASA)					
[ /	] [ ]	. [ ].	[ ] (A	[ DD/DELETE)				
* CIL RETENTION	RATIONALE: (	If applicabl	.e) ADEQUATE INADEQUATE	• -				
REMARKS: FMEA 02-6-E24-1 CRITICALITY REFL OF GN2 PRESSURE. CREW GETS SM ALE CIRC PUMP SWITCH	ECTS WORST C RT IF ACCUM. ES ARE PLACE	CASE SCENARIO GN2 PRESSUR ED IN "GPC" P	O, I.E, INSTA RE DROPS BELO POSITION APPR	NTANEOUS LOSS W 1900 PSIA. OX. 2 1/2				
HOURS INTO MISSI AUTOMATICALLY TU BELOW 1960 PSIA.			WARE THAT WI I. GN2 PRESSU					

ASSESSME ASSESSME NASA FME	NT I	D:	HYDW	SB-	413 5-1					DATA ELINE NEW	[	] x ]	
SUBSYSTEMDAC ID:			HYD/ 413 SSME		CUMUI	LATOR							
LEAD ANA	LYSī	r:	W. D	AVII	OSON								
ASSESSME	NT:												
J					REDU	JNDANG	CY SCE	REENS	5		CII		
		FLIGH DW/FU	-		A		В		С		111	214	
NASA IOA	[ 3	3 /3	]	]	P ] NA]	[	P ] NA]	[ [	P ] NA]		[	]	*
COMPARE	[	/	3	[	N ]	[	N ]	[	N ]		[	]	
RECOMMEN	DATI	cons:	(I	f d	iffeı	cent i	from N	VASA)	ı				
	[	/	1	. [	NA]	[	NA]	[	NA]	(A)	[ DD/I	) DELE	TE)
* CIL RE	TENI	rion	RATIO	ŅALI	E: (1	[f_ap	olicak		ADEQ IADEQ	UATE UATE	[	]	
FMEA 02-	6-A1	L6-1	INCOR	POR	ATES	MDAC	ID'S	413	AND	416.			

ASSESSMENT I ASSESSMENT I NASA FMEA #	ID:	1/08/8 HYDWSI 02-6-8	3-414					ASA DATA BASELINE NEW	[	x	]	
SUBSYSTEM: MDAC ID: ITEM:		HYD/WS 414 SSME A		MULAT	OR							
LEAD ANALYS	T:	W. DAY	/IDS	NC								
ASSESSMENT:								-				
	TICAL		R	EDUND	ANCY	SCREE	ens		CI II	L CEM	[	
	HDW/FUNC A				В		С					
NASA [	2 /1R 2 /1R	]	[ P	]	[ P	]	[ P	]	֡֞֝֞֞֝֟֞֝֞֞֝֞֞֞֞֞֞֞֞֞֞֞֞֞֞֞֞֞֞֞֞֞֞֞֞֞֞֞	X X	]	*
COMPARE [	/	]	[	]	[	]	[	]	[		]	
RECOMMENDAT	ions:	(If	dif	feren	t fro	om NAS	SA)	B - 1 1 1 1 1 1		91		
[	/	]	[	]	[	]	[	] (A	[ DD/	/DE	] :LE	ETE ;
* CIL RETEN	TION 1	RATION	ALE:	(If	appl:	icable	A	DEQUATE DEQUATE	]	x	]	
REMARKS:												

ASSESSMENT DATE: ASSESSMENT ID: NASA FMEA #:		[ x ]									
MDAC ID:	HYD/WSB 415 SSME ACCUMULATOR		ż								
LEAD ANALYST:	W. DAVIDSON										
ASSESSMENT:											
CRITICALITY REDUNDANCY SCREENS CI FLIGHT IT HDW/FUNC A B C											
HDW/FU	NC A B	C									
NASA [ / IOA [ 3 /3	] [ NA] [ NA] [	NA]	[ ] *								
COMPARE [ N /N	] [N] [N] [	N ]	[ ]								
RECOMMENDATIONS:	(If different from NASA)	)									
[ /	] [ ] [ ] [	] (AD	[ DD/DELETE)								
* CIL RETENTION	RATIONALE: (If applicable)	ADEQUATE NADEQUATE	[ ]								
REMARKS: THIS FAILURE (MD. FAILURE IN FLIGHT	AC ID 415) BE DELETED. IT	IS NOT A	REDIBLE								

ASSESSMENT DATE ASSESSMENT ID: NASA FMEA #:	: 1/08/87 HYDWSB-416 02-6-A16-1		NASA DATA: BASELINE NEW	[ ]
SUBSYSTEM: MDAC ID: ITEM:	HYD/WSB 416 GN2 FILL VA	LVE		
LEAD ANALYST:	W. DAVIDSON	ī		
ASSESSMENT:				
CRITICA FLIG		DUNDANCY SCREENS	3	CIL ITEM
HDW/F		В	С	11111
NASA [ 3 /3 IOA [ 3 /3	] [ P ] ] [ NA]	[ P ] [ [ NA] [	P ] NA]	[ ] *
COMPARE [ /	] [ N ]	[и]	N ]	[ ]
RECOMMENDATIONS	: (If diffe	erent from NASA	)	
[ / :/	] [ NA]	[ NA] [	NA]	[ DD/DELETE
* CIL RETENTION	RATIONALE: (		ADEQUATE NADEQUATE	
REMARKS: FMEA 02-6-A16-1	INCORPORATES	MDAC ID'S 413	AND 416.	

ASSESSMEN ASSESSMEN NASA FME	NT I	D:		B-41	7				NASA DAT BASELIN NE			]	
SUBSYSTEM MDAC ID: ITEM:			HYD/W 417 SSME		MULA:	ror							
LEAD ANA	LYST	:	W. DA	VIDS	ON								
ASSESSMEN	T:		,										
C	F	LIGHT				DANCY B			C · · · · · · · · ·	I	IL TEI		
NASA IOA	[ 2 [ 2	/1R /1R	].	[ P	]	[ P	]	[	P ] P ]				
COMPARE	[	/	]	[	]	[	]	[	]	[		]	
RECOMMENI	OATI	ONS:	(If	dif	fere	nt fro	om NA	SA)					
	[ .	/	]	[	. 1	[	]	[	] (	] ADD	/D1	] ELETE	)
* CIL RET	rent:	ION I	RATION	ALE:	(If	appl:	icabl	-	ADEQUATE ADEQUATE	[	<b>X</b>	]	
REMARKS:													

ASSESSMENT DATE: ASSESSMENT ID: NASA FMEA #:	HYDWSB-421						
SUBSYSTEM: MDAC ID: ITEM:	HYD/WSB 421 PRESSURE TRANS	SDUCER					
LEAD ANALYST:	W. DAVIDSON						
ASSESSMENT:							
CRITICAL FLIGH	ITY REDUNI T	DANCY SCRE	ENS	CIL ITEM			
HDW/FU	NC A	В	С				
NASA [ 3 /3 IOA [ 3 /3	] [ ] ] [ NA]	[ ] [ NA]	[ ] [ NA]	[ ] *			
COMPARE [ /	] [ N ]	[ N ]	[ N ]	[ ]			
RECOMMENDATIONS:	(If differen	nt from NA	SA)				
[ /	] [ NA]	[ NA]		[ ] .DD/DELETE)			
* CIL RETENTION	RATIONALE: (If	applicable	ADEQUATE				
REMARKS: FMEA -02-6-A16-4	INCORPORATES N	MDAC ID'S	INADEQUATE 421, 422, AN	• • • • • • • • • • • • • • • • • • •			

ASSESSME ASSESSME NASA FME	NT I	D:		B-4				BASELII	NE [	x ]	
SUBSYSTEM MDAC ID:			HYD/W 422 PRESSI		E TRAI	NSDUCER					
LEAD ANA	LYST	:	W. DA	VII	OSON		·				
ASSESSME	NT:										
•		ICAL: LIGH	ITY r		REDUI	NDANCY S	CREENS	3		IL TEM	
		W/FUI			A	В		С		:	
NASA IOA	[ 3 [ 3	/3 /3	]	[	NA]	[ ] [ NA]	[	NA]	. [		*
COMPARE	[	/	]	[	n j	[ N ]	[	N ]	[		
RECOMMEN	DATI	ons:	(If	đ:	iffer	ent from	NASA)	ŀ			
	[	1	]	[	NA]	[ NA]	[	NA]		) DEI	LETE)
* CIL RE	TENT	ION 1	RATION	ALI	E: (I:	f applic		ADEQUATI		<u> </u>	
REMARKS: FMEA -02	-6-A	16-4	INCOR	POI	RATES	MDAC ID	'S 421	L, 422, i	AND	423.	

ASSESSMEN ASSESSMEN NASA FME	NT I	D:	HYDV	ISB-4	23						A DA' SELI N	NE		_	
SUBSYSTEM MDAC ID:			423	RESSURE TRANSDUCER											
LEAD ANA	LYSI	r:	W. I	IIVAC	OSON										
ASSESSME	NT:														÷
		CICAL			REDU	NDAN	CY :	SCR	EENS	5			CIL		
FLIGHT HDW/FUNC A							В			С				12.2	
NASA IOA	[ 3	3 /3	]	]	NA]	]	NA	]	[	NA]			[	]	*
COMPARE	[	/	]	[	N ]	Ţ	N	]	[	N ]			[	]	
RECOMMEN	DAT:	ions:	(:	If d	iffer	ent	fro	m N	'ASA'	)					
• .	[	/	]	[	NAJ	[	NA	]	[	NA]		(A)	[ DD/I		ETE)
* CIL RE	TEN'	TION	RATI(	ONAL	E: (I	f ap	pli	cab			TAUQ:		[	]	
REMARKS: FMEA -02	-6-2	A16-4	INC	ORPO	RATES	MDA	C I	D'S	42	1, 4	22,	AN:	D 42	23.	

ASSESSMEN ASSESSMEN NASA FME	I TN		1/08/ HYDWS 02-6-	B-4					NASA <u>DA'</u> BASELII N			]	
SUBSYSTEM MDAC ID:	M:		HYD/W 424 GN2 P		SSURE	GAGI	2						
LEAD ANA	LYST	:	W. DA	VII	OSON								
ASSESSME	NT:												
(		ICAL			REDUN	DANG	CY SC	REENS	3		IL TEM	7	
	_	LIGH W/FU	NC		<b>A</b>		<b>B</b>		-1	Link	1		
NASA IOA	[ 3	/3 /3	]	[	NA] NA]	]	NA] NA]	[	NA] NA]	[ ]		] *	k
COMPARE	[	/	]	[	]	[	]	[	]	[		]	
RECOMMENI	DATI	ons:	(If	đ	ffere	nt i	from 1	NASA)					
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* CIL RES	TENT	ION	RATION	ALI	E: (If	app	plical		ADEQUAT!			]	
REMARKS:	c_31	6-2	TNCODD	<b>∩</b> D7	THE M	ח גרו	TDIS	121	AND 425				

ASSESSME ASSESSME NASA FME	NT ID:	HYDV	8/87 NSB-425 5-A16-2				NASA DAT BASELIN NE		x ]	
SUBSYSTE MDAC ID:		HYD/ 425 GN2	/WSB PRESSURE	GAGE	:					
LEAD ANA	LYST:	W. I	DAVIDSON							
ASSESSME	NT:									
		CALITY IGHT	REDU	NDANC	Y SCR	EENS		CI IT		
	HDW/	FUNC	A		В		C			
NASA IOA	[ 3 /	/3 ] /3 ]	[ NA] [ NA]	]	NA] NA]	[ [	NA] NA]	[	] * ]	
COMPARE	[ /	/ ]	[ ]		]	[	]	Γ	]	
RECOMMEN	IDATION	<b>15:</b> (	If differ	ent f	from N	ASA)				
	· [	/ ]	[ ]	[	]	[	]	[ (ADD/	] DELET	E)
	Q2 Q1		ONALE: (I	f app	olicab		ADEQUATI IADEQUATI	•	]	
REMARKS:		-2 TNCO	RPORATES	MDAC	TD'S	424	AND 425		•	

ASSESSME ASSESSME NASA FME	NT	I		HY	08/8 DWS1 -6-1	B-										DA ELI N		[	X	]	
SUBSYSTE MDAC ID:	м:			42			CT:	ION	N MO	то	R										
LEAD ANA	LYS	ST	:	W.	DAV	VI)	DS	NC													
ASSESSME	NT:	:																			
	CRI		ICAL LIGH				R	EDU	JNDA	NC	Y	SCR	REEN					CI	[L PEM	ſ	
	F	HDI	W/FU	NC			A				В			С							
NASA IOA			/1R	]		[	P P	]		[	P P	]	[ [	P P	]			[ [		]	*
COMPARE	[		/	]				]		[		]	[		]			[		]	
RECOMMEN	DAT	ric	ons:		(If	<b>d</b> :	if	fer	ent	f	r	om N	IASA	)							
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* CIL RE	TEI	NT:	ION	RAT	ION2	ΑL	E :	(I	[f a	pp	1	icab	-			UAT UAT		[		]	
FMEA 02-	6-I	E29	9-1	INC	ORPO	DR	ATI	ES	THI	S	F <i>I</i>	AILU	RE.								

ASSESSME ASSESSME NASA FME	ENT	I		HY	DWS	B-4										DAT ELII NI	1E	[	x	]	
SUBSYSTEMDAC ID:				42	D/WS 7 VERS		R									-					
LEAD ANA	LY	ST	:	W.	DAV	/II	DSC	ИС													•
ASSESSME	ENT	:																			
		F	ICAL: LIGH:	Г				EDU	INDA			SCF	REEN					CI	L	ſ	
	J	HDI	W/FUI	NC			A				В			С							
NASA IOA	[ [	3	/1R /1R	]		[	P P	]		[	P P	]	[	P P	]			[		]	*
COMPARE	[		/	]		[		]		[		]	(		]			[		]	
RECOMMEN	IDA!	ri	ons:		(If	đ:	if	fer	ent	: f	r	om N	IASA	.)							
	[		/	]		[		]		[		]	[		]		(AI	] \ac	'DE	] :LF	ETE:
* CIL RE		NT:			ION		€:	(I	f a	pp	11	icak				UATI UATI		[		]	
FMEA 02-		E29	9-1	INC	ORPO	DRA	ATI	ES	THI	S	F	AILU	JRE.								

ASSESSME ASSESSME NASA FME	NT	II	<b>):</b>	H	/08/ YDWS: 2-6-:	B-										DAT ELIN NE	E	[ [ X	]	
SUBSYSTE MDAC ID: ITEM:	M:			4	YD/W 28 OW P		ss	PU	MP											-
LEAD ANA	LYS	T:	;	W	. DA	VI:	DS	ИС								-				
ASSESSME	NT:																			
			[CA]		Y		RI	EDU	NDA	NC	CY	SCI	REEN	S				CIL [TE]		
	H	DV	V/F	JNC			A				В			С						
NASA IOA	[	3 3	/11 /11	R ]		]	P P	]		[	P P	]	[	P P	]		[		]	*
COMPARE	[		/	]		[		]		[		]	[		]		(	[	]	
RECOMMEN	DAT	'IC	ONS:	:	(If	đ	if	fer	ent	: f	rc	om 1	NASA	)						
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* CIL RE	TEN	Ţ	CON	RA'	TION	<b>AL</b>	E:	(I	f a	pp	<b>1</b> i	lcak		IA IAV	DEQ DEQ	UATE UATE	[	• •	]	
REMARKS: FMEA 02-	6-E	29	9-1	IN	CORP	OR	ATI	2S	THI	:s	F#	ILU	JRE.							

ASSESSME ASSESSME NASA FME	ENT	ID:	1/08/3 HYDWS 02-6-3	B-42				1	NASA DAT BASELIN NE		]
SUBSYSTE MDAC ID:			HYD/W 429 HI PR		PUMP	,					
LEAD ANA	LYS	T:	W. DA	VIDS	ON						
ASSESSME	ENT:										
		TICAL	r			DANCY	SCRE			- CII	
	H	IDW/FU	NC	A	•	В		(	2		
NASA IOA	[ [	3 /1R 3 /1R	]	[ P	]	[ P [ P	]	[ ]	P ]	[	] *
COMPARE	[	/	1	[	]	[	]	[	]	[	]
RECOMMEN	IDAT	ions:	(If	dif	fere	nt fro	om NA	SA)		•	i işeliri
	[ ]	,/	1.	[	]	[	]	[	] (	[ ADD/D	] ELETE
* CIL RE		TION 1	RATION	ALE:	(If	appl	icabl	1	ADEQUATE ADEQUATE		]
FMEA 02-		29-1	INCORP	ORAT	ES T	HIS F	AILUR	E.			

ASSESSMENT DATE: ASSESSMENT ID: NASA FMEA #:	HYDWSB-430		BASELINE NEW	[ x ]
SUBSYSTEM: MDAC ID: ITEM:	HYD/WSB 430 PRESS ACTIVA	TED RELIEF VA	LVE	
LEAD ANALYST:	W. DAVIDSON			
ASSESSMENT:				
CRITICAL FLIGH	T	NDANCY SCREEN		CIL ITEM
HDW/FU	NC A	В	С	
NASA [ / IOA [ 3 /1R	] [ ] ] [ P ]	[ ] [ [ P ] [	] P ]	[ ] *
COMPARE [ N /N	] [ N ]	[и]	[и]	[ ]
RECOMMENDATIONS:	(If differ	ent from NASA	7)	
[ /	] [ ]	[ ] (	[ ] (A)	[ ] DD/DELETE)
* CIL RETENTION	RATIONALE: (I		ADEQUATE	[ ]
REMARKS: THE "CAUSES" OF THIS FAILURE.	FMEA 02-6-E29	-1 SHOULD BE	EXPANDED TO	O INCORPORATE

ASSESSMENT DATE: ASSESSMENT ID: NASA FMEA #:	1/08/87 HYDWSB-431	NASA I BASE	= ' ' ' '
SUBSYSTEM: MDAC ID: ITEM:	HYD/WSB 431 PRESS ACTIVATED	RELIEF VALVE	
LEAD ANALYST:	W. DAVIDSON		
ASSESSMENT:			
CRITICAL FLIGH HDW/FU	T	NCY SCREENS B C	CIL ITEM
		r 1 f 1	. 1 *
NASA [ / IOA [ 3 /1R	] [ ] : <b>]</b> [ <b>F</b> ]	[ ] [ ] [ P ] [ P ]	[
COMPARE [ N /N	) [N]	[ N ] [ N ]	[ N ]
RECOMMENDATIONS:	(If different	from NASA)	
[ 3 /1R	[ F ]	[ P ] [ P ]	[ A ] (ADD/DELETE
* CIL RETENTION REMARKS:	RATIONALE: (If a	pplicable) ADEQUA INADEQUA	
	HAT A FMEA BE WR	ITTEN TO COVER T	HIS FAILURE.

ASSESSME ASSESSME NASA FME	NT	II		HY	/08/8 /DWSI 2-6-8	3-4									DATA LINE NEW	[	x	]	
SUBSYSTE MDAC ID: ITEM:				43	D/WS 2 LEED		•	/E											
LEAD ANA	LY	ST	•	W.	. DAY	/II	osc	N											
ASSESSME	NT	:																	
	CR:		ICAI LIGH		ľ		RI	EDUNI	OAN	CY	SCI	REEN	S				IL PEI	4	
	1		W/FU				A			В			С		•				
NASA IOA			/1F			[	P P	]	[	P P	]	[	P P	]		[	X X	]	*
COMPARE	[		/	]		[		]	[		]	[		]		[		]	
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* CIL RE		NT:	ION	RAT	CION	AL	E:	(If	ap	pl:	ical				JATE JATE	[	x	]	

ASSESSME ASSESSME NASA FME	NT	I			08/8 DWSE		133	3						]	NASA BASE		[	]		
SUBSYSTE MDAC ID:	M:			433	_		TU	JATE	ם ס	CC	TNC	'RC	OL VA	\L	VE					
LEAD ANA	LYS	ST	:	w.	DAV	ΊΙ	osc	N												
ASSESSME	NT:	:																		
	CR:		ICAL LIGH				RI	EDUN	DAI	10	CY	s	CREEN	IS			CIL			
	I		W/FU				A				В			1	C					
NASA IOA	[	3	/ /3	]		[	N?	] []		[ [	NA	]	[ [	•	NA]		[	]	*	
COMPARE	[	N	/N	]		[	N	]		[	N	]	- [		ן א		[	]		
RECOMMEN	DA'	rI(	ONS:		(If	đ	Ĺfí	fere	nt	1	fro	m	NASA	A)						
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* CIL RE	TEI	NT:	ION :	RAT:	IONA	LI	Ξ:	(If	aj	ρľ	oli	.ca	able)				_	_		
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REMARKS: THIS FAI								, SH	OUI	CI	ЭВ	ΒE	DELE	ET:	ED.	IT IS	S RE	DUI	NDA	NT

AS	SESSME SESSME SA FME	NT	I		H,	/08/8 /DWS1 2-6-8	B-									SA BASI	ELI	NE		x	]	
MD	BSYSTE AC ID: EM:				43			CT	JATEI	D C	ON	TRO	L V	ΑI	VE	2						
LE	AD ANA	LY	ST	:	W.	. DA	VI	DS	NC													
AS	SESSME	NT	:																			
			F	ICAL: LIGH: W/FUI	r	Č		RI A	EDUNI	DAN	ICY B		REE	NS	c				-	CL CEN	1	
	NASA IOA			/1R /1R			[	P P	]	[	P	]		]	P P	]			]	X X	]	*
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SUBSYSTEMDAC ID:				43	D/WS 5 LOT		AL7	VΕ												
LEAD ANA	ALYS	ST:	:	W.	DA	VI	DSC	М												
ASSESSMI	ENT	:																		
	CR		ICAL LIGH		?		RI	EDU	NDA	NC	Y	SCR	EEN	S			CI	L	ī	
	I		W/FU				A				В			С					•	
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COMPARE	[		/	]		[		]		[		]	[		]		[		]	
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REMARKS		R2'	- 7-1	TNC	ÒRP	OR	<b>አ</b> ጥነ	RS	THT	's	F/	ATLU	RE.			-			,	÷

ASSESSMI ASSESSMI NASA FMI	ENT	I	Ď:	1/08/ HYDWS 02-6-	B	43									DAT ELIN NE	ΙE	[	] x ]	
SUBSYSTI MDAC ID: ITEM:				HYD/W 436 PILOT			VE												
LEAD AN	ALY	ST	:	W. DA	VI	DS	ИС												
ASSESSMI	ENT	:																	
		F	ICAL: LIGH	r			EDU	INDA			SCR	EEN					CI:		
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* CIL RI		NT:	ION 1	RATION	AL	E:	(I	f a	pp	lj	cab				UATE UATE		[	]	
REMARKS:		RE	IS :	INCORP	OR	ATI	ΞD	IN	FM	E <i>P</i>	02	-6-1	<b>3</b> 27	7-3	•				
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SUBSYSTE MDAC ID: ITEM:					LV	Æ										
LEAD ANA	LYST	r:	W. DA	/II	SC	N										
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	_	FLIGH DW/FU			A			В			С			TTI	.ivi	
NASA IOA	[ 3	3 /3	]	[	NA	]	[	N.A	]	]	N.	]		[	]	*
COMPARE	[ ]	N / N	]	[	N	]	[	N	]	[	N	]		[	]	
RECOMMEN	DAT	cons:	(If	di	fí	eren	it	fro	m	nasa)	)					
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* CIL RE	TENT	rion	RATION	ALE	C:	(If	ар	pli	ca	_			JATE		]	
REMARKS:										IN	IAI	DEQU	JATE	[	]	
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ASSESSME	ASSESSMENT DATE: 1/08/87 ASSESSMENT ID: HYDWSB-438 NASA FMEA #: 02-6-E27-4											SA D BASEI		[	x	] -	
SUBSYSTEM MDAC ID:	M:		438	/WSB TER													
LEAD ANA	LYST	:	W.	DAVI	DS	ON											
ASSESSME	NT:																
		ICAL			R	EDUN	DANC	Y	SCRE	ENS	3			CI I'l	L EM	•	
	_	W/FUI			A			В			С					-	
NASA IOA		/1R /1R	]	] ]	P P	]	]	P P	]	[	P P	]		[		]	*
COMPARE	[	/	]	[		]	[		]	[		]		[		]	
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* CIL RE	TENT	ION I	RATI	ONAL	E:	(If	app	<b>1</b> i	icable			EQUA EQUA		[		]	
REMARKS:							•										

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SUBSYSTI MDAC ID: ITEM:				HYD/V 439 FILTE														
LEAD AND	ALYS	ST:	:	W. DA	VI	DSC	ИС											
ASSESSMI	ENT:	:																
	CRI		CAL			RI	EDU	INDAN	CY	SCF	REEN	3				IL		
	F		JIGH' V/FU			A			В			С			17	ΓEN	1	
NASA IOA	[	3	/ /1R	]	[ [	P	]	]	F	]	[	P	]		[	X	]	*
COMPARE	[	N	/N	1	[	N	]	[	N	]	[	N	]		[	N	]	
RECOMME	rad <i>n</i>	ric	ons:	(II	đ	if	fer	ent	fr	m M	IASA	)						
	ָר <u>`</u>	3	/1R	]	[	P	]	Į.	F	]	[	P				A /DI		ETE)
* CIL RI		(Tr	ON :	RATIO	IAL.	E :	(I	[f ap	pl:	icak		AI NAI	DEQUATI DEQUATI	<b>Ξ</b>	[		]	
IOA REC		ENI	os F	MEA TO	C	ovi	ER	THIS	F	AILU	JRE.				-			

ASSESSME ASSESSME NASA FME	NT I		HYDW	3/87 ISB-44 5-E27-					A DATA SELINI NEV		]		
SUBSYSTE MDAC ID:			HYD/ 440 PRES	WSB S. AC	TIVA	TED B	YPA	SS VA	LVE		12		
LEAD ANA	LYST	:	w. r	AVIDS	ON								
ASSESSME	NT:												
CRITICALITY REDUNDANCY SCREENS CIL FLIGHT ITEM													
	_	W/FU		A		В			С		TIE	4	
NASA IOA	[ 3	/1R /1R	]	[ P	]	[ P [ P	]	[	P ] P ]		[	] ;	k
COMPARE	נ	/	1	]	]	(	]	[	]		[	]	
RECOMMEN	DATI	ons:	(1	f dif	fere	nt fr	om	nasa)					
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* CIL RE	TENT	ION :	RATIO	NALE:	(If	appl	ica	ble)	ADE	QUATE	[	]	
								IN		QUATE		j	
REMARKS: THIS FAI THE EFFE					) SH	OULD	BE	COMBI	NED	WITH	MDAC	ID	#442.

ASSESSMENT DATE: ASSESSMENT ID: NASA FMEA #:	1/08/87 HYDWSB-441		NASA DATA: BASELINE NEW		]
MDAC ID:	HYD/WSB 441 PRESS. ACTIVATE	ED BYPASS V	ALVE		
LEAD ANALYST:	W. DAVIDSON	==			
ASSESSMENT:					
CRITICAL! FLIGHT		ANCY SCREENS	5	CIL ITEM	
HDW/FU		В	С	1120	
NASA [ / IOA [ 3 /3	] [ ] ] [ NA]	[ ] [ [ NA ]	] NA]		] <b>*</b> ]
COMPARE [ N /N	] [ N ]	[ N ] [	<b>n</b> ]	[	]
RECOMMENDATIONS:	(If different	t from NASA	)		
. [ /	] [ ]	[ ] [	] (AI	[ DD/DE	] LETE)
* CIL RETENTION 1	RATIONALE: (If a		ADEQUATE NADEQUATE	[	]
REMARKS: THIS FAILURE, MD IMPROBABLE AND HA	AC ID #441, SHOW AS NEGLIGIBLE EN	ULD BE DELE	red. IT IS	3 HIG	HLY

	1/08/87 HYDWSB- 02-6-E2		NASA DATA BASELINE NEW	[ ]	
SUBSYSTEM: MDAC ID: ITEM:	HYD/WSB 442 PRESS.	ACTIVATEI	BYPASS	VALVE	
LEAD ANALYST:	W. DAVI	DSON			
ASSESSMENT:					
CRITICA FLIG		REDUNDAN	ICY SCREE	ins	CIL ITEM
HDW/F		A	В	C	TIEM
NASA [ 3 /1: IOA [ 3 /1:	R ] [	P ] [	P ] P ]	[ P ] [ P ]	[ ] *
COMPARE [ /	] [	] [	]	[ ]	[ ]
RECOMMENDATIONS	(If d	ifferent	from NAS	SA)	
[ /	] [	) (	1	[ ] (A)	[ ] DD/DELETE)
* CIL RETENTION	RATIONAL	E: (If ar	plicable	ADEQUATE	
REMARKS: THIS FAILURE SHOARE THE SAME.				· · · · · · · · · · · · · · · · · · ·	
NASA REVIEW DELI RETAINED AND "C. FROM CIRC. PUMP PRESSURIZE ACCU	USES" EX OUTPUT T	PANDED TO	COVER A	S FMEA SHOU LL CAUSES OF EN FLOW IS T	F LEAKAGE

ASSESSMEI ASSESSMEI NASA FME	NT ID:		B-44				NASA DAT BASELIN NI		] { ]	
SUBSYSTER MDAC ID:	M:	HYD/WA 443 CHECK		VE		-				
LEAD ANA	LYST:	W. DA	VIDS	ON						
ASSESSME	NT:									
(	CRITICAL FLIGH		R	EDUNI	DANCY	SCRE	ENS	CII ITI		
	HDW/FU	NC	A		В		С			
	[ 3 /1R [ 3 /1R	]	[ P	]	[ P	]	[ P ] [ P ]	[	] * ]	
COMPARE	[ /	]	[	]	[	1	[ ]	[	]	
RECOMMEN	DATIONS:	(If	dif	fere	nt fr	om NA	SA)			
	[ /	]	[	]	[	]	[ ]	[ (ADD/I	] DELETE	2)
* CIL RE	TENTION	RATION	ALE:	(If	appl	icabl	e) ADEQUATI	<b>⊡</b> [	]	
REMARKS:							INADEQUATI		j	

ASSESSME	ASSESSMENT DATE: 1/08/87 ASSESSMENT ID: HYDWSB-444 NASA FMEA #: 02-6-E26-1 SUBSYSTEM: HYD/WSB													A DAT SELIN NE		x ]	
SUBSYSTE MDAC ID:				44			r s	RAN	SDU	CE:	R						
LEAD ANA	LYS	T:	:	W.	DAV	/II	SC	И									
ASSESSME	NT:	:															
	CRI		CAL LIGH				RE	DUN	DAN	CY	SC	REEN	S		CI IT	L EM	
	F	IDV	V/FU	NC			A			В			С				
NASA IOA	[ [	3	/3 /3	]		[	NA NA	\]	[	N.	A] A]	[	NA] NA]		[	]	*
COMPARE	[		/	]		(		]	[		]	[	1		[	]	
RECOMMEN	[AD]	CIC	ons:		(If	d:	iff	ere	nt	fr	om 1	NASA	)				
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* CIL RE	TEN	T]	ON	RAT	IONA	LI	≘:	(If	ap	pl	ical			QUATE		: · · .	
REMARKS:		_										I	NADE	QUATE	[	]	

ASSESSMENT DATE: 1/08/87 ASSESSMENT ID: HYDWSB-445 NASA FMEA #: 02-6-E26-1										BASE	LINE NEW	[	x	]	
SUBSYSTE MDAC ID:	EM:			445		E TRAI	NSDU	CER							
LEAD ANA	LYS	ST:	;	W.	DAVII	OSON									
ASSESSME	ENT:	;													
		FI	JIGH	LITY IT INC		REDU:	NDAN(	CY S	CREEN	s C		CI II	[L [EM	1	
NASA IOA			/3 /3			NA] NA]	[	NA] NA]	[	NA] NA]		[		]	*
COMPARE	[		/	]	[	]	[	]	[	]		[		]	
RECOMMEN	IDA'I	ric	ons:	: (	If d	iffer	ent :	from	NASA	.)					
	[		/	1.	[	]	[	]	[	]	(A	] ,DD,		] ELE	ETE)
* CIL RE		T	ON	RATI	ONAL	E: (I	f ap	plic		ADEQU NADEQU		[		]	
REMARKS:	•														

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SUBSYSTEM MDAC ID: ITEM: TEMPERATURE			-		RE TF	ANS	DUCERS	NC	T USED	FOR	CIE	RC I	PUMP
LEAD ANAL	YST:		W. DAV	IDS	NC								
ASSESSMEN'	T:												
C	FL	CALI		Ri A	EDUNE		Y SCRE	ENS	c C		CIL ITEN	1	
	HDW	/FUN	C	A		ļ	_						
NASA IOA	[ 3 [ 3	/3 /3	]	[ NZ	A] A]	[ ]	NA] NA]	[	NA] NA]		[	] 7	k
COMPARE	[	/	]	[	1	[	]	[	1		[	]	
RECOMMEND	ATIO	NS:	(If	dif	ferer	t f	rom NA	SA)					
	[	/	]	[	]	ſ	]	[	1	(AD	[ D/DI	] ELET	ΓE)
* CIL RET	ENTI	ON R	ATIONA	LE:	(If	app:	licable		ADEQUA' IADEQUA'		[	]	

ASSESSMEN ASSESSMEN NASA FMEA	NT ID:	HYDWSB-	447		NASA DA BASELI N	
SUBSYSTEM MDAC ID: ITEM: USED FOR			TURE TR		S MONITOREI	D BY FDA AND
LEAD ANA	LYST:	W. DAVI	DSON			
ASSESSME	NT:					
(	CRITICAL: FLIGH HDW/FU	T NC	A	ancy scr B	C	CIL ITEM
NASA IOA	[ 3 /3 [ 3 /3	] [	NA] NA]	[ NA] [ NA]	[ NA] [ NA]	[ ] *
COMPARE	[ /	] [	]	[ ]	[ ]	[ ]
RECOMMEN	DATIONS:	(If d	ifferen	t from N	ASA)	
	[ /	) [	]	[ ]	[ ]	[ . ] (ADD/DELETE
* CIL RET	- · · · · · · · · · · · · · · · · · · ·		E: (If	applicab	le) ADEQUAT INADEQUAT	
			v • •			

ASSESSMENT DATE: ASSESSMENT ID: NASA FMEA #:	NASA DATA BASELINE NEW	[ ]											
SUBSYSTEM: MDAC ID: ITEM:	HYD/WSB 448 QUICK DI	SCONNEC	TS-GROUN	D SERVICING	(RETURN)								
LEAD ANALYST:	W. DAVID	SON											
ASSESSMENT:													
CRITICAL FLIGH		REDUNDA	NCY SCRE	ENS	CIL ITEM								
HDW/FU		A	В	С	A 444 4								
NASA [ 3 /1R IOA [ 2 /1R	] [	P ] P ]	[ F ] [ P ]	[ P ] [ P ]	[ X ] *								
COMPARE [ N /	] [	1	[ N ]	[ ]	[ ]								
RECOMMENDATIONS:	(If di	.fferent	from NA	SA)									
[ /	] [	]	[ ]	[ ] · (A)	[ ] DD/DELETE)								
	CIL RETENTION RATIONALE: (If applicable)  ADEQUATE [ ]  INADEQUATE [ X ]												
REMARKS: IOA FOR HYDRAULI	CS/WATER	SPRAY B	SOILER AS	SUMED THAT QUE FOR ANALYSIS	UICK PURPOSES.								

THE NASA ASSUMPTION THAT THEY ARE REDUNDANT ITEMS IS MORE REALISTIC. MDAC ANALYSIS SHEETS 448 AND 449 SHOULD BE REWRITTEN TO ANALYZE BOTH THE QUICK DISCONNECT AND CAP. THE FLIGHT CRITICALITIES THEN BECOME 3/1R. THE SUPPLY AND RETURN LINE QD'S HAVE DIFFERENT LEVELS OF REDUNDANCY BECAUSE OF A CHECK VALVE IN THE SUPPLY LINE. NASA FMEA'S SHOULD REFLECT THIS.

NASA DATA:

ASSESSMENT DATE ASSESSMENT ID: NASA FMEA #:	: 1/08/87 HYDWSB-448A 02-6-E02-2		NASA DATA: BASELINE NEW	
	HYD/WSB 448	ONNECTS-GROUND	SERVICING (	(RETURN)
LEAD ANALYST:	W. DAVIDSON	ī		
ASSESSMENT:				
		OUNDANCY SCREEN	ıs	CIL
FLIG HDW/F	INC A	В	С	ITEM
NASA [ 3 /1 IOA [ 2 /1	R] [F]	[ F ] [   [ P ] [	P ] P ]	[ X ] * [ X ]
COMPARE [ N /	ј [иј	[и] [	. 1	[ ]
RECOMMENDATIONS	: (If diffe	erent from NASA	7)	
ι, /	] [ ]	[ NA] [	(Ar	[ ] DD/DELETE)
* CIL RETENTION	RATIONALE: (		ADEQUATE NADEQUATE	[ ]
REMARKS:				
IOA FOR HYDRAUL	ICS/WATER SPE	CAY BOILER ASSU	MED THAT QU	JICK
DISCONNECTS AND THE NASA ASSUMP	.APS WERE A THT THAT THE	SINGLE UNIT FO	IT TTEMS IS	MORE
REALISTIC. MDA	C ANALYSIS SH	IEETS 448 AND 4	49 SHOULD H	BE REWRITTEN
TO ANALYZE BOTH	THE QUICK DI	SCONNECT AND C	CAP. THE FI	LIGHT
CRITICALITIES T	HEN BECOME 3/	'IR. THE CAP S	HOULD BE CO	ONSIDERED
"STANDBY REDUND	ANT". THE SU	IPPLY AND RETUR	CM TIME OD.S	D HAVE

DIFFERENT LEVELS OF REDUNDANCY BECAUSE OF A CHECK VALVE IN THE

SUPPLY LINE. NASA FMEA'S SHOULD REFLECT THIS.

ASSESSME	SESSMENT DATE: 1/08/87 SESSMENT ID: HYDWSB-449 SA FMEA #: 02-6-E02-1											NASA DATA: BASELINE [ ] NEW [ X ]								
SUBSYSTE MDAC ID: ITEM:	M:			44			cso	CONN	ECI	<b>!</b> —(	GF	OUND	SI	ERV	/ICIN	G (	SUI	PI	.Υ)	
LEAD ANA	LYS	T:	:	W.	DAV	711	osc	N												
ASSESSME	NT:																			
CRITICALITY REDUNDANCY SCREENS CIL ITEM																				
			V/FUI				A			1	В			C						
NASA IOA	[	3 3	/1R /1R	]			P P	]	[		F P	]	[	P P	]		[	X	]	*
COMPARE	[		/	]		[		]	[	1	N	]	[		]		[	N	]	
RECOMMEN	DAT	IC	ons:		(If	đ	if1	ere	nt	f	rc	m NA	SA)	l						
	[		/	]		[		]	[			]	[		]	(A	] .DD/	'DE	] :LE	TE)
* CIL RE	TEN	TI	ON I	RAT	IONA	L	€:	(If	aŗ	p.	li	.cabl			EQUA EQUA		[	x	]	
REMARKS: IOA FOR	REMARKS: IOA FOR HYDRAULICS/WATER SPRAY BOILER ASSUMED THAT QUICK DISCONNECTS AND CAPS WERE A SINGLE UNIT FOR ANALYSIS PURPOSES.																			

THE NASA ASSUMPTION THAT THEY ARE REDUNDANT ITEMS IS MORE

RETURN LINE QD'S HAVE DIFFERENT LEVELS OF REDUNDANCY. NASA

REALISTIC. MDAC ANALYSIS SHEETS 448 AND 449 SHOULD BE REWRITTEN TO ANALYZE BOTH THE QUICK DISCONNECT AND CAP. THE SUPPLY AND

FMEA'S SHOULD REFLECT THIS.

ASSESSMENT DATE: ASSESSMENT ID: NASA FMEA #:	HYDWSB-4	149A	NASA DATA: BASELINE [ ] NEW [ X ]							
SUBSYSTEM: MDAC ID: ITEM:	HYD/WSB 449 QUICK D	ISCONNECT-GR	OUND SERVICING (	SUPPLY)						
LEAD ANALYST:	W. DAVII	OSON								
ASSESSMENT:										
CRITICAL FLIGH	ITY	REDUNDANCY	SCREENS	CIL ITEM						
HDW/FU		A B	C	11111						
NASA [ 3 /1R IOA [ 3 /1R	] [	F ] [ F P	] [P]	[ X ] *						
COMPARE [ /	] [	и] [и	j [ ]	[ N ]						
RECOMMENDATIONS:	(If d	ifferent fro	m NASA)							
[ /	] . [	] [ NA	[ ] (A)	[ ] DD/DELETE)						
* CIL RETENTION	RATIONAL	E: (If appli	cable) ADEQUATE INADEQUATE							
DISCONNECTS AND THE NASA ASSUMPT REALISTIC. MDAC TO ANALYZE BOTH	CAPS WER ION THAT ANALYSIS THE QUIC HAVE DI FLECT TH	E A SINGLE U THEY ARE RE S SHEETS 448 K DISCONNECT FFERENT LEVE	R ASSUMED THAT QUIT FOR ANALYSIS DUNDANT ITEMS IS AND 449 SHOULD AND CAP. THE SLS OF REDUNDANCY SHOULD BE CONSI	PURPOSES.  MORE BE REWRITTEN UPPLY AND . NASA						

ASSESSMENT DATE: ASSESSMENT ID: NASA FMEA #:	1/08/87 HYDWSB-4 02-6-C08	150 3-1	N	BASELINE NEW	
		SCONNECT-	HYD. GROUN	D POWER S	SUPPLY-
LEAD ANALYST:	W. DAVII	SON			
ASSESSMENT:					
CRITICALI FLIGHT		REDUNDANC	Y SCREENS		CIL ITEM
		A	В	:	
NASA [ 3 /1R IOA [ 2 /1R	] [	P ] [ P ] [	F ] [ F	) ]	[ X ] * [ X ]
COMPARE [ N /	] [	] [	] [	3	[ ]
RECOMMENDATIONS:	(If di	ifferent f	rom NASA)		
<b>[</b> •/	] [	] [	· ] [	] (Al	[ ] DD/DELETE)
* CIL RETENTION I	RATIONALE	E: (If app		DEQUATE	[ ]
REMARKS: IOA FOR HYDRAULIC DISCONNECTS AND CONASA ASSUMPTION THE ANALYSIS SHEET BOTH QUICK DISCONDING.	CAPS WERE THAT THEY ET (MDAC	E SINGLE U ARE REDU ID 450 SH	LER ASSUME NIT FOR AN NDANT ITEM OULD BE RE	D THAT QUALYSIS PUSS IS MORI	JICK URPOSES. THE E REALISTIC. TO ANALYZE

ASSESSMENT DATE: ASSESSMENT ID: NASA FMEA #:	1/08/87 HYDWSB-4502 02-6-C08-2	A	NASA DATA: BASELINE NEW	
SUBSYSTEM: MDAC ID: ITEM: LANDING GEAR STO		ONNECT-HYD. GR	OUND POWER S	SUPPLY <del>-</del>
LEAD ANALYST:	W. DAVIDSON	N		
ASSESSMENT:				
FLIG		DUNDANCY SCREE	ns C	CIL ITEM
•		_		
NASA [ 3 /1] IOA [ 2 /1]	R ] [F	[ F ] ] [ F ]	[ P ] [ P ]	[ X ] * [ X ]
COMPARE [ N /	] [ N	] [ ]	[ ]	[ ]
RECOMMENDATIONS	(If diffe	erent from NAS	A)	
[ /	] [	] [ NA]	[ ] (AI	[ ] DD/DELETE)
* CIL RETENTION	RATIONALE:		) ADEQUATE INADEQUATE	[
REMARKS: IOA FOR HYDRAUL DISCONNECTS AND NASA ASSUMPTION THE ANALYSIS SH BOTH QUICK DISC 3/1R. THE CAP	CAPS WERE S THAT THEY A EET (MDAC ID ONNECT AND C	INGLE UNIT FOR RE REDUNDANT I 450 SHOULD BE AP. THE CRITI	ANALYSIS POTEMS IS MORI TEMS IS MORI REWRITTEN TO CALITIES THI	URPOSES. THE E REALISTIC. TO ANALYZE EN BECOME

ASSESSMENT DATE: ASSESSMENT ID: NASA FMEA #:	1/08/87 HYDWSB-451 02-6-A02-2		NASA DATA: BASELINE NEW	
SUBSYSTEM: MDAC ID: ITEM:	HYD/WSB 451 QUICK DISC	ONNECT-HYD/SSME		
LEAD ANALYST:	W. DAVIDSO	N	$   u   = e^{\frac{\pi}{4}}$	
ASSESSMENT:				
CRITICAL: FLIGHT		DUNDANCY SCREENS		CIL
HDW/FUI		В	C	IIEM
NASA [ 3 /1R IOA [ 2 /1R	] [ P	] [ P ] [ ] [ P ]	P ] P ]	[ X ] * [ X ]
COMPARE [ N /	1 [	] [ ] [	1	[ ]
RECOMMENDATIONS:	(If diff	erent from NASA)		
[ 2 /	] [	] [ ] [	] (AD	[ ] D/DELETE)
* CIL RETENTION I	RATIONALE:		ADËQUATE ADEQUATE	[ X ]
REMARKS: IOA CRITICALITY I POSITION THAT THE 1 CRITICALITY SHO	S FAILURE	IS CRIT 3 IS VAL		

ASSESSMENT DATE: ASSESSMENT ID: NASA FMEA #:	1/08/87 HYDWSB-451A 02-6-A02-12	1	IASA DATA: BASELINE NEW	
SUBSYSTEM: MDAC ID: ITEM:	HYD/WSB 451 QUICK DISCONNEC	CT-HYD/SSME	(SUPPLY)	
LEAD ANALYST:	W. DAVIDSON			
ASSESSMENT:				
CRITICAL: FLIGHT HDW/FUI	T	ANCY SCREENS B		CIL ITEM
NASA [ 3 /1R IOA [ 2 /1R	] [ P ] ] [ P ]	[ P ] [ I	? ]	[ X ] *
COMPARE [ N /	] [ ]	[ ] [	]	[ ]
RECOMMENDATIONS:	(If different	t from NASA)		
[ /	] [ ]	[ ] [	] (Al	[ DD/DELETE)
* CIL RETENTION I	RATIONALE: (If a	7	ADEQUATE ADEQUATE	[ x ]

ASSESSMENT DATE: ASSESSMENT ID: NASA FMEA #:	HYDWSB-452		ASA DATA: BASELINE [ NEW [ X	
SUBSYSTEM: MDAC ID: ITEM:	HYD/WSB 452 QUICK DISCONN	ECT-HYD/SSME	RETURN)	
LEAD ANALYST:	W. DAVIDSON			
ASSESSMENT:				
FLIGH'	r	DANCY SCREENS	CIL ITE	
HDW/FUI	NC A	Δ .		
NASA [ 1 /1 IOA [ 2 /1R	] [ NA] ] [ P ]	[ NA] [ N [ P ] [ I	[ X ] [ X	] <b>*</b> ]
COMPARE [ N /N	] [ N ]	[и] [и	] [	]
RECOMMENDATIONS:	(If differe	nt from NASA)		
[ /	] [ ]	[ ] [	] [ (ADD/D	
* CIL RETENTION	RATIONALE: (If	1	DEQUATE [ X DEQUATE [	]
REMARKS: AGREE WITH NASA ( WITH JERRY BORRE)	R/DF65.			
IOA CRITICALITY I POSITION THAT FAT 02-6-A02-1 CRITIC	ILURE 02-6-A02	-2 IS CRIT 3 1	S VALID; THE	IF NASA's N FMEA

ASSESSMENT DATE: 1/08/87 ASSESSMENT ID: HYDWSB-453 NASA FMEA #: 02-6-SYSTEN													ASA BASE	LIN		. 3	X	]	
SUBSYSTE MDAC ID:			HYD 453 QUI			[SC	CONNI	ect	-H?	ZD/SS	ME	(8	SUPP	rY)					
LEAD ANA	LYSI	?:	W.	DAV	II	oso	ИС												
ASSESSME	ENT:																		
	1	TICAL FLIGH DW/FU	T			RI A	EDUNI	DAN	CY B	SCRE	EN	s C				II TI	L EM		
NASA IOA	[ 2	2 /1R 2 /1R	]		[	P P	]	[	P P	]	[	P P	]		[	1	X X	]	*
COMPARE	C	/	]		[		]	[		]	[		]		[			]	
RECOMMEN	IDAT]	ons:	(	If	đi	ifi	fere	nt	fr	om NA	SA	)							
	[	/	]		[		]	[		]	[		]	(	] ADE	)/1	DE	] LF	ETE :
* CIL RE		rion	RATI	ONA	LI	Ξ:	(If	ap	pl:	icabl			DEQU DEQU			· ]	X	]	

ASSESSME ASSESSME NASA FME	1/08/ HYDWS: 02-6-	B−4						NASA DA BASELI N		[		]			
SUBSYSTE MDAC ID:			HYD/W 454 QUICK			ONNEC	ст-н			(RETURN		ē.	i di k		
LEAD ANA	LYST:	:	W. DA	VID	so	N			. : " _					x:	
ASSESSME	NT:														
		CAL LIGH V/FUI	r		RE A	DUNDA	ancy B	SCRE	ENS	c c			[L	1	
NASA IOA	[ 2 [ 2	/1R /1R	]	[	P P	]	[ P	]	[	P ] P ]		[	X X	]	*
COMPARE	[	/	]	[		]	[	]	[	]		[		]	
RECOMMEN	IDATIC	ons:	(If	di	ff	erent	: fr	om NA	SA	)					
	[	/	]	[		]	[	]	[	]	(AI		/DI		ETE)
* CIL RE		ON 1	RATION.	ALE	:	(If a	appl	icabl		ADEQUAT NADEQUAT		[	X	]	

ASSESSMENT DATE: ASSESSMENT ID: NASA FMEA #:	HYDWSB-455	NASA DATA BASELINE NEW	
SUBSYSTEM: MDAC ID: ITEM:	URN LINE FROM ENG'S/	ACT'S	
LEAD ANALYST:	W. DAVIDSON		
ASSESSMENT:			
CRITICAL: FLIGHT HDW/FUI		NCY SCREENS B C	CIL ITEM
NASA [ 3 /1R IOA [ 3 /3	] [ F ] ] [ NA]	[ NA] [ P ] [ NA] [ NA]	[ X ] *
COMPARE [ /N	] [ N ]	[ ] [ ] ]	[ N ]
RECOMMENDATIONS:	(If different	from NASA)	
[ 3 /3	] [ NA]	[ NA ] [ NA ] (A)	[ D ] DD/DELETE)
* CIL RETENTION 1	RATIONALE: (If a	pplicable) ADEQUATE INADEQUATE	[ x ]
REMARKS: IOA CONSIDERS A 3 DOCUMENT. WE REC THEREBY REMOVING	COMMEND DOWNGRAD	TO BE CONSISTENT WITH ING THE CRITICALITY OF	H THE 22206 FO 3/3

ASSESSME	ESSMENT DATE: 1/08/87 ESSMENT ID: HYDWSB-456 A FMEA #: 02-6-A07-2									NASA DATA: BASELINE [ ] NEW [ X ]										
SUBSYSTE MDAC ID: ITEM:	M:			456			LV	Æ-RI	ETUI	RN	LII	NE	FI	RON	A ENG	'S/A	CI		;	
LEAD ANA	LYS	ST	:	W.	DAV	II	osc	N												
ASSESSME	NT:	;																		
	CRI		[CAL]				RE	DUNI	OANC	CY	SCI	REE:	NS	3			CI	L EM		
	ŀ		LIGHT W/FUN				A			В				С			Τ.1	. E.P.	L	
NASA IOA	[	1	/1 /1R	]		]	NA P	]	[	NA P	]		]	NA P	A] ]		[	X X	] :	*
COMPARE	[	N	/N	3		[	N	]	[	N	]		[	N	]		[		]	
RECOMMEN	DAT	CIC	ons:		(If	di	iff	ere	nt i	fro	m l	NAS.	A)	ı						
	[		/	]		[		]	[		]		[		]	(AE	[ D/	'DE	] ELE:	ΓE)
* CIL RE	TEI	(T	ION I	RAT	IONA	L	C :	(If	app	pli	.cal				DEQUA!		[	X	]	
IOA CONC BORRER/D			HTIN	NAS	SA E	V?	ALU	ATIC	ON I	BAS	ED	ON	I	)IS	CUSS:	ION	WI	TH	IJ	ERRY

ASSESSMENT DATE: ASSESSMENT ID: NASA FMEA #:	1/08/87 HYDWSB-457 02-6-SYSTI		NASA DATA: BASELINE [ ] NEW [ X ]					
SUBSYSTEM: MDAC ID: ITEM:	HYD/WSB 457 HOSE AND S	SWIVEL ASS	Y:TVC ACT	UATORS				
LEAD ANALYST:	W. DAVIDSO	ИС						
ASSESSMENT:								
CRITICAL FLIGH HDW/FU	T	EDUNDANCY B	SCREENS C		IL TEM			
·		_			W 1 1			
NASA [ 2 /1R IOA [ 2 /1R		] [ P ] [ P	] [ P ] [ P	] [	X ] * X ]			
COMPARE [ /	] [	] [	] [	] [	]			
RECOMMENDATIONS:	(If diff	ferent fro	m NASA)					
[ /	] [	] . [	] [	] [ (ADD	] /DELETE			
* CIL RETENTION	RATIONALE:	(If appli	AD	EQUATE [ EQUATE [	x ]			

REMARKS:

ASSESSMENT DATE: ASSESSMENT ID: NASA FMEA #:	1/08/87 HYDWSB-45 02-6-A11-1			ASA DATA: BASELINE NEW	
	HYD/WSB 457 HOSE AND	SWIVEL AS	SY:TVC AC	TUATORS	
LEAD ANALYST:	W. DAVIDS	ОИ			
ASSESSMENT:					
CRITICAL FLIGH	T	EDUNDANCY	SCREENS		CIL ITEM
HDW/FU	NC A	В	C		
NASA [ 2 /1R IOA [ 2 /1R	] [ P	] [ P	] [ P	]	[ X ] *
COMPARE [ /	] [	] [	] [	]	[ ]
RECOMMENDATIONS:	(If dif	ferent fr	om NASA)		
[ /	] . [	] [	] [	] (Al	[ ] OD/DELETE)
* CIL RETENTION	RATIONALE:	(If appl	A	DEQUATE DEQUATE	[ X ]
REMARKS:					

ASSESSMENT DATE: ASSESSMENT ID: NASA FMEA #:		NASA D BASEL 2	ATA: INE [ ] NEW [ X ]							
SUBSYSTEM: MDAC ID: ITEM: SUPPLY LINES	HYD/WSB 458 HOSE AND SWIT	RS/SSME HYD-								
LEAD ANALYST: W. DAVIDSON										
ASSESSMENT:	•									
CRITICAL FLIGH	CIL ITEM									
HDW/FU	NC A	ВС								
NASA [ 2 /1R IOA [ 2 /1R		[P] [P] [P] [P]	[ X ] * [ X ]							
COMPARE [ /	] [ ]	[ ] [ ]	[ ]							
RECOMMENDATIONS:	(If differe	ent from NASA)								
[ /	] [ ]	[ ] [ ]	[ ] (ADD/DELETE)							
* CIL RETENTION	RATIONALE: (I	f applicable) ADEQUA INADEQUA								
REMARKS: 458 & 459 CAN BE EFFECTS DUE TO D		THERE IS NO MEANINGF DELAYS OF FAILURE.	UL DIFFERENCE IN							

ASSESSME ASSESSME NASA FME	NT I		HYDW	/87 SB-45 -A15-					ASA DAT BASELIN NE		
SUBSYSTE MDAC ID: ITEM: SUPPLY L			HYD/ 458 HOSE		SWIV	EL ASS	SY:TV	C AC	<b>TUATORS</b>	s/ssme hyd-	
LEAD ANA	LYST	:	<b>W.</b> D.	AVIDS	ИС						
ASSESSME	NT:	•									
	F	ICAL: LIGH: W/FUI		R: A		DANCY B	SCRE	ENS C		CIL ITEM	
NASA IOA		/1R /1R	]	[ P	]	[ P [ P	]	[ P	]	[ X ] * [ X ]	
COMPARE	[	/	]	[	]	[	]	[	1	[ ]	
RECOMMEN	DATI	ons:	(I	f dif	fere	nt fro	om NA	SA)			
	[	/	]	[	3	[	]	[	] (	[ ] ADD/DELETE)	
* CIL RE		ION 1	RATIO	NALE:	(If	appl	icabl	Al	DEQUATE DEQUATE		
REMARKS: 458 & 45		N BE	COMB	INED	IF T	HERE 3	s NC	MEAI	NINGFUI	DIFFERENCE	IN

EFFECTS DUE TO DIFFERENT TIME DELAYS OF FAILURE.

ASSESSMENT DATE: ASSESSMENT ID: NASA FMEA #:	1/08/87 HYDWSB-459 02-6-SYSTEM-2	]	ASA DATA: BASELINE [ ] NEW [ X ]
SUBSYSTEM: MDAC ID: ITEM: RETURN LINES	HYD/WSB 459 HOSE AND SWIVE	EL ASSY:TVC AC	TUATORS/SSME HYD.
LEAD ANALYST:	W. DAVIDSON		
ASSESSMENT:			
CRITICAL FLIGH HDW/FU	T	DANCY SCREENS B C	CIL ITEM
NASA [ 2 /1R		[P] [P	] [X]*
IOA [ 2 /1R	] [ P ] ] [ P ]	[ P ] [ P [ P ] [ P	] [ X ]
COMPARE [ /	] [ ]	[ ] [	] [ ]
RECOMMENDATIONS:	(If differe	nt from NASA)	
[ /	] [ ]	[ ] [	] [ ] (ADD/DELETE
* CIL RETENTION REMARKS:	RATIONALE: (If	A	DEQUATE [ X ] DEQUATE [ ]

ASSESSMENT DATE: ASSESSMENT ID: NASA FMEA #:	1/08/87 HYDWSB-459A 02-6-A15-1		NASA DATA BASELINE NEW	-
	HYD/WSB 459 HOSE AND SWIVE	EL ASSY:TVO	C ACTUATORS/	SSME HYD.
LEAD ANALYST:	W. DAVIDSON			
ASSESSMENT:				
CRITICAL: FLIGHT HDW/FUI		DANCY SCREI	ens C	CIL ITEM
NASA [ 2 /1R IOA [ 2 /1R	] [ P ] ] [ P ]	[ P ] [ P ]	[ P ] [ P ]	[ X ] *
COMPARE [ /	] [ ]	[ ]	[ ]	[ ]
RECOMMENDATIONS:	(If differe	nt from NAS	5 <b>A</b> )	
[ /	] [ ]	[ ]	[ ] (A	[ DD/DELETE
* CIL RETENTION I	RATIONALE: (If	applicable	ADEQUATE	[ x ]

ASSESSMENT DATE: ASSESSMENT ID: NASA FMEA #:	1/08/87 HYDWSB-460 02-6-SYSTE		NASA DATA: BASELINE [ ] NEW [ X ]							
SUBSYSTEM: MDAC ID: ITEM:	HYD/WSB 460 HOSE AND S	SWIVEL ASS	SY: WATER	SPRAY BO	DILERS					
LEAD ANALYST:	W. DAVIDSO	N								
ASSESSMENT:										
CRITICAL FLIGH		EDUNDANCY	SCREENS		CIL ITEM					
HDW/FU		. <b>B</b>	C	!						
NASA [ 2 /1R IOA [ 2 /1R	] [ P ] [ P	] [ P ] [ P	] [ P	]	[ X ] *					
COMPARE [ /	] [	] [	] [	]	[ ]					
RECOMMENDATIONS:	(If diff	ferent fro	om NASA)							
[ /	] [	] [	] [	] (AI	[ ] OD/DELETE)					
* CIL RETENTION	RATIONALE:	(If appli	A	DEQUATE	[ X ]					
REMARKS:			TIME	DECONTE	r · J					

ASSESSMENT DATE: ASSESSMENT ID: NASA FMEA #:	1/08/87 HYDWSB-46 02-6-E28			NASA DATA: BASELINE [ ] NEW [ X ]						
	HYD/WSB 460 HOSE AND	SWIVE	L ASSY:	WATER SPI	RAY BOILERS					
LEAD ANALYST:	W. DAVID	SON								
ASSESSMENT:										
CRITICAL FLIGH HDW/FU	T		ANCY SCI B	REENS C	CIL ITEM					
NASA [ 2 /1R IOA [ 2 /1R	.] [1	P ] P ]	[ P ] [ P ]	[ P ] [ P ]	[ X ] * [ X ]					
COMPARE [ /	] [	}	[ ]	[ ]	[ ]					
RECOMMENDATIONS:	(If di	fferent	t from 1	NASA)						
[ /	] [	]	[ ]	. [ ]	[ ] (ADD/DELETE)					
* CIL RETENTION REMARKS:	RATIONALE	: (If a	applical		JATE [ X ] JATE [ ]					
remarno.										

	1/08/87 HYDWSB-461 02-6-H04-1	NASA DATA: BASELINE [ ] NEW [ X ]										
MDAC ID: 4	HYD/WSB 461 NOSE WHEEL STEERIN	G FLEX HOSE ASSEI	MBLY									
LEAD ANALYST: V	W. E. PARKMAN		•									
ASSESSMENT:												
CRITICALIT FLIGHT		SCREENS	CIL ITEM									
HDW/FUNC		c c										
NASA [ 2 /1R ] IOA [ 2 /1R ]		P] [P]	[ X ] * [ X ]									
COMPARE [ / ]	) [ ] [N	[ ] [ ]	[ ]									
RECOMMENDATIONS:	(If different fr	om NASA)										
[ / ]	] [ ] [	] [ ]	[ ] ADD/DELETE									
	ATIONALE: (If appl	icable) ADEQUATE INADEQUATE	[ X ]									
REMARKS: SCREEN B SHOULD BE	E CHANGED TO "PASS	, ,										

ASSESSMENT DATE: ASSESSMENT ID: NASA FMEA #:	HYDWSB-462	} -	NASA DATA: BASELINE [ ] NEW [ X ]								
MDAC ID:	HYD/WSB 462 MAIN LANDI										
LEAD ANALYST: W. E. PARKMAN											
ASSESSMENT:											
CRITICALITY REDUNDANCY SCREENS CIL ITEM											
FLIGHT HDW/FUN		В	С		ITEM						
NASA [ 2 /1R IOA [ 2 /1R	] [ P ] [ P	] [ P ] [ F	] [ P	]	[ X ] *						
COMPARE [ /	] [	] [ N	] [	]	[ ]						
RECOMMENDATIONS:	(If diff	erent fro	om NASA)								
[ /	] [	] [ NA	.] [	] (AD	[ ] D/DELETE)						
* CIL RETENTION H	RATIONALE:	(If appli	AΓ	EQUATE EQUATE							
REMARKS: SCREEN B SHOULD BE CHANGED TO NOT APPLICABLE. THE PYROS ARE UNLIKE REDUNDANT ITEMS AND ARE EXCLUDED BY 2.3.4.b.2.c OF NSTS 22206.											

ASSESSMEN ASSESSMEN NASA FMEA	T II	):	HY	DWSE	3-4	63			NASA DATA: BASELINE NEW						ΙE				
SUBSYSTEM MDAC ID: ITEM:			463			IDI	NG	GE	AF	t F	LEX	к но	SE	(RETRA	\CT	')			
LEAD ANAI	YST	:	W.	E.	PA	RK	MAN	1											
ASSESSMEN	T:																		
c	F	ICAL: LIGH: W/FUI	r				DUN	IDAI	NC	Y B	SCR	REEN	is C				L	1	
		•																	
NASA IOA	[ 2 [ 2	/1R /1R	]		[	P P	]		[	P F	]		P	]		[	X	]	*
COMPARE	[	/	]		[		]		[	N	]	I		1		[		]	
RECOMMEND	ATI	ons:	•	(If	đi	lff	ere	ent	Í	rc	om N	ias <i>i</i>	4)		-				
	<b>,</b>	/	]				]		[	NA	<b>\]</b>			]	(AE			ELI ELI	ETE)
* CIL RET	ENT	ION 1	RAT	ION	ALI	Ξ:	(II	f a	pŗ	<b>1</b> 1	cab		A	DEQUATI				]	
REMARKS: SCREEN B UNLIKE RE 22206.	SHO!	ULD DANT	BE IT	CHAI EMS	NGI Al	ED 1D	TO ARI	NO E E	T XC	AI CLU	PPLI	CAI DB'	BLE	. THE .3.4.b	PY .2.	RC C	)S (0)	AI F 1	RE NSTS

ASSESSMEN ASSESSMEN NASA FMEA	T II	<b>):</b>	HYDWSI	3-4								ASA D BASEL	INE				
SUBSYSTEM MDAC ID: ITEM:	:		HYD/WS 464 HYDRAU		c	LINE	ı i										
LEAD ANAL	YST	:	W. DAY	/IC	SC	N											
ASSESSMEN	T:																
c	FI	CALI LIGHT	r		RE A	:DUND	AN	CY B	SCRI	EENS	c			CI II	L EM	ſ	
NASA IOA	[ 2	/1R /1R	]	[	P P	]	[	P P	]	[	P P	]		[	X X	]	*
COMPARE	[	/	]	[		]	[		1	[		]		(		]	
RECOMMEND	ATIC	ons:	(If	di	ff	eren	t :	fro	om N2	ASA)							
•	[	/ 	]	[		]	[		]	[		]	(AI		'DE		TE)
* CIL RET	ENTI	ON I	RATION	LE	:	(If	apı	<b>91</b> i	[cab]	•		DEQUA'		[	x	]	
REMARKS: THE FMEA RUPTURE.	02-6	5-SYS	STEM-3	RE	PR	ESEN	TS	WC	RST	CAS	E	HYDRA	AULI	C	LI	NE	

	1/08/87 HYDWSB-465 02-6-SYSTEM-3	NASA DATA BASELINE NEW	· <del>·</del>					
SUBSYSTEM: MDAC ID: ITEM:	HYD/WSB 465 HYDRAULIC LINE	(SUPPLY) SYSTEM 1						
LEAD ANALYST:	W. DAVIDSON							
ASSESSMENT:								
CRITICAL: FLIGHT	ITY REDUNDA	ANCY SCREENS	CIL ITEM					
HDW/FUI		В С	11211					
NASA [ 2 /1R IOA [ 2 /1R	] [ P ] ] [ P ]	[ P ] [ P ] [ F ] [ P ]	[ X ] * [ X ]					
COMPARE [ /	] [ ]	[ N ] [ ]	[ ]					
RECOMMENDATIONS:	(If different	t from NASA)						
, <u>, , , , , , , , , , , , , , , , , , </u>	] [ ]	[ F ] [ ] · (A	[ ] DD/DELETE)					
* CIL RETENTION 1	RATIONALE: (If a	applicable) ADEQUATE INADEQUATE						
REMARKS: A SECOND FMEA SHOULD BE WRITTEN TO COVER RUPTURE OF HYDRAULIC LINE SEGMENTS THAT ARE NOT DETECTABLE DURING FLIGHT PER DOC. 22206 DEFINITION.								

ASSESSMENT DATE: ASSESSMENT ID: NASA FMEA #:	HYDWSB-	466		NASA DATA: BASELINE NEW	[ x ]
SUBSYSTEM: MDAC ID: ITEM:	HYD/WSB 466 HYDRAUL		(RETURN) S	YSTEM 1	
LEAD ANALYST:	W. DAVI	DSON			
ASSESSMENT:					
CRITICAL FLIGH		REDUNDA	NCY SCREEN	S	CIL ITEM
HDW/FU		A	В	ITEM	
NASA [ 2 /1R IOA [ 3 /1R	] [	P ] P ]	[ P ] [ [ F ] [	P ] P ]	[ X ] * [ X ]
COMPARE [ N /	] [	]	[ и ] [	]	[ ]
RECOMMENDATIONS:	(If d	ifferent	from NASA	)	
[ 3 /	] [	1	[ ] . [	] (AI	[ DD/DELETE)
* CIL RETENTION	RATIONAL	E: (If a		ADEQUATE NADEQUATE	[ x ]
REMARKS: LANDING GEAR WIL IS DEPLETED. A HYDRAULIC LINE S FMEA 02-6-SYSTEM HYDRAULIC LINE R	FMEA SHO EGEMENTS -3. FME	ULD BE W THAT HA	RITTEN TO (	COVER RUPTU LITIES DIFF	TRE OF THAN

ASSESSMENT DATE: ASSESSMENT ID: NASA FMEA #:	HYDWSB-46	•							
SUBSYSTEM: MDAC ID: ITEM:	HYD/WSB 467 HYDRAULIC	LINE							
LEAD ANALYST:	W. DAVIDS	ON							
ASSESSMENT:									
CRITICAL FLIGH	CIL ITEM								
HDW/FU	NC A	P	}	С					
NASA [ 2 /1R IOA [ 2 /1R		] [ F	? ] [	P ] P ]	[ X ] * [ X ]				
COMPARE [ /	] [	] [	] [	1	[ ]				
RECOMMENDATIONS:	(If dif	ferent fr	om NASA	)					
[ / ]	] [	] , [	] [	] (A)	[ ] DD/DELETE)				
* CIL RETENTION	* CIL RETENTION RATIONALE: (If applicable)  ADEQUATE [ X ]  INADEQUATE [ ]								
REMARKS: FMEA 02-6-SYSTEM	REMARKS: FMEA 02-6-SYSTEM-3 REPRESENTS WORST CASE HYDRAULIC LINE RUPTURE.								

ASSESSMEN ASSESSMEN NASA FME	NT I	ID:	HYI	708/87 NASA DATA: 2DWSB-468 BASELINE 2-6-SYSTEM-3 NEW								E [	x ]		
SUBSYSTEM MDAC ID: ITEM:	M:		468	D/WSB B DRAUL]	C	LINE	E				T THE S				
LEAD ANA	LYS	r:	W.	DAVII	osc	N			-						
ASSESSME	ASSESSMENT:														
01/11/01/11/1								CI	L EM						
	_	DW/FU			A			В			С			LIFI	
NASA IOA		2 /1R 2 /1R	]	נ נ	P P	]	]	P P	]	[ [	P P	]	]	x ]	*
COMPARE	[	/	]	[		]	[		]	[	•	]	[	]	
RECOMMEN	DAT:	ions:	(	(If di	Ĺff	erer	nt f	r	om N	ASA)					
	[	/	]	[		]	[		]	[	•	) (	] ADD/	DELE	TE)
REMARKS:	* CIL RETENTION RATIONALE: (If applicable)  ADEQUATE [ X ]  INADEQUATE [ ]  REMARKS:														
FMEA 02-	FMEA 02-6-SYSTEM-3 REPRESENTS WORST CASE HYDRAULIC LINE RUPTURE.														

ASSESSMENT D ASSESSMENT I NASA FMEA #:		HYDWSI	08/87 NASA DATA DWSB-469 BASELINE -6-G04-1 NEW								[	x	]		
SUBSYSTEM: MDAC ID: ITEM:		HYD/WS 469 REDUNI		T	SHUTO	)F	F T	/ALVE	(1	1.0	).)				
LEAD ANALYST	:	W. DA	VID	SC	N										
ASSESSMENT:															
FLIGHT								I L TEI							
HD	W/FU	NC		A			В			С					
NASA [ 3 IOA [ 2	/1R /1R	]	[	P P	]	[	F F	]	[ [	P P	]	[ [	X X	]	*
COMPARE [ N	/	]	[		]	[		]	[		]	[		]	
RECOMMENDATI	ons:	(If	di	ff	ferent	<b>t</b> :	fr	om NAS	SA)	)					
[ 2	/1R	1	[		]	[		] .	[		] (A		/DI	] ELI	ETE)
* CIL RETENT	* CIL RETENTION RATIONALE: (If applicable)  ADEQUATE [ X ]  INADEQUATE [ ]														
	REMARKS: THE IOA CRITICALITY IS BASED ON THE UNDERSTANDING THAT THE PYRO UNLOCK MECHANISM CANNOT OVERRIDE HYDRAULIC PRESSURE LOCKUP.														

ASSESSME	NT DATE	E: 1/08/	87			1	NASA DAT	'A:	
ASSESSMEI NASA FME	NT ID:	HYDWS 02-6-	B-470				BASELIN NI	E [	]*
SUBSYSTEMDAC ID:	M:	HYD/W 470 REDUN		SHUTTO	FF VAL	VE (1			* * * *
LEAD ANA	LYST:	W. DA	VIDSO	N					
ASSESSME	NT:								
(	CRITICA FLIC HDW/E	SHT	RE A	DUNDAN	icy scr B	EENS	:	CII	
NASA IOA	[ 3 /3	3 ] 3 ]	[ NA [ NA	] [	NA]	1 ] 1 ]		[	] * ]
COMPARE	[ /	]	נ	) [	1	[	]	[	]
RECOMMEN	DATIONS	5: (If	diff	erent	from N	ASA)			
	[ /	3	[	] [	]	[	]	[ ADD/E	] ELETE
* CIL RE	<b>TENTION</b>	N RATION	ALE:	(If ap	plicab	1	ADEQUATE		]
REMARKS:									

ASSESSMENT DATE: 1/08/87 ASSESSMENT ID: HYDWSB-471 NASA FMEA #: 02-6-SYSTEM-2								A DATA SELINE NEW		]
SUBSYSTE MDAC ID:								)		
LEAD ANA	LYST:	W. DAV	/IDS	ON						
ASSESSME	NT:									
	CRITICAL FLIGH		R	EDUND	ANCY S	SCREEN	S		CIL	
	HDW/FU	INC	A		В		С			
NASA IOA	[ 2 /1F [ 2 /1F	l ]	[ P	]	[ P ]	] [	P ] P ]		[ X	] *
COMPARE	[ /	]	[	]	[ N ]	] [	]		[	]
RECOMMEN	DATIONS:	(If	dif	feren	t from	n NASA	)	. 1	<del>.</del>	
	[ /	]	[	1 .	[ F	] [	]	<b>(A</b> )	[ [D\DD	] ELETE)
* CIL RE	TENTION	RATIONA	ALE:	(If	applio	cable)	ADE	QUATE	[ X	1
REMARKS:						I		QUATE	[ X	j
A SECOND	FMEA SH							NAL LEZ 206 DE		

ASSESSMENT DATE: ASSESSMENT ID: NASA FMEA #:	HYDWSB-47	SB-472 BASELINE [						
	HYD/WSB 472 LANDING GI	EAR DUMP S	SOLENOID	VALVE (N.	c.)			
LEAD ANALYST:	W. DAVIDS	ИС						
ASSESSMENT:								
CRITICAL: FLIGHT	ITY RI	EDUNDANCY	SCREENS		CIL ITEM			
HDW/FUI		В		С	IIDN			
NASA [ 3 /1R IOA [ 3 /1R	] [ P	] [ F ] [ F	] [	P ] P ]	x ] x ]	] * ]		
COMPARE [ /	] [	] [	] [	]	[	]		
RECOMMENDATIONS:	(If diff	ferent fro	om NASA)	-				
[ 2 /	] [	] [	] [	] (AD	[ DD/DE	] LETE)		
* CIL RETENTION I	RATIONALE:	(If appli		ADEQUATE ADEQUATE	[ X	]		
REMARKS: FAILURE OF REDUNI IN HYDRAULIC LOCK						L RESULI		

ASSESSMEI ASSESSMEI NASA FME	NT ID:	1/08/87 HYDWSB- 02-6-G0	473		NASA DATI BASELINI NEV		]
SUBSYSTEM MDAC ID:	M:	HYD/WSB 473 LANDING		DUMP SOLEN	OID VALVE (1	M.C.)	
LEAD ANA	LYST:	W. DAVI	DSON				
ASSESSME	NT:						
•	CRITICAI FLIGH HDW/FU	T	REDUNI A	DANCY SCRI B	EENS C	CII	
NASA IOA	[ 3 /3 [ 3 /3	] [	NA] NA]	[ NA] [ NA]	[ NA] [ NA]	[	] * ]
COMPARE	[ /	] [	]	[ ]	[ ]	Ţ	]
RECOMMEN	DATIONS:	(If d	iffere	nt from NA	ASA)		
· ·	<u>,                                    </u>	] [	1	[ ]	[ ]	[ ADD/I	] DELETE)
	TENTION	RATIONAL	E: (If	applicabl	le) ADEQUATE INADEQUATE		]
REMARKS:							

ASSESSMEN ASSESSMEN NASA FME	NT I	D:	1/08/8 HYDWSF 02-6-8	3-474					ASA DATA BASELINE NEW		
SUBSYSTEMDAC ID:	M:		HYD/WS 474 LANDIN		EAR I	UMP	SOLE	NOID '	VALVE (N	.c.)	
LEAD ANA	LYST	:	W. DAY	/IDS	N						
ASSESSME	NT:										
(	F	ICALI	r		EDUNI		Y SCR			CIL ITEM	
	HD	W/FU1	1C	A		•	В	С			
NASA IOA	[ 2 [ 2	/1R /1R	]	[ P	]	[	P ] F ]	[ P [ P	]	[ X ]	*
COMPARE	[	/	1	(	]	[ ]	и ]	[	1	[ ]	
RECOMMEN	DATI	ons:	(If	dif	ferei	nt f	rom N	ASA)			
•	[	/	]	[	]	[	]	[	] (A	[ ] DD/DELE	ETE)
* CIL RE	TENT	ION I	RATIONA	ALE:	(If	app	licab	A	DEQUATE DEQUATE	[ X ]	

FMEA CORRECT. SHOULD PASS SCREEN B.

ASSESSMENT DATE: ASSESSMENT ID: NASA FMEA #:	•	·							
	HYD/WSB 475 PRIORITY VALVE								
LEAD ANALYST:	W. DAVIDSON								
ASSESSMENT:	ASSESSMENT:								
CRITICAL	CIL ITEM								
FLIGH HDW/FU		в с	TTEM						
NASA [ / IOA [ 2 /1R	] [ ]	[ ] [ ] [ P ] [ P ]	[ x ] *						
COMPARE [ N /N	] [N]	[и] [и]	[ N ]						
RECOMMENDATIONS:	(If different	from NASA)							
/	] [ ]	(AI	[ ] DD/DELETE)						
* CIL RETENTION RATIONALE: (If applicable)									
• · · · · · · · · · · · · · · · · · · ·	·	ADEQUATE INADEQUATE							
REMARKS: DELETE THIS MDAC MDAC ID 476.	ID. BECAUSE OF	VALVE DESIGN, IT IS	IDENTICAL TO						

ASSESSMENT DATE: ASSESSMENT ID: NASA FMEA #:	1/08/87 HYDWSB-47 02-6-E23-			NASA DATA BASELINE NEW	: [				
SUBSYSTEM: MDAC ID: ITEM:	HYD/WSB 476 PRIORITY	VALVE		New 182 of 18	t na in a				
LEAD ANALYST:	W. DAVIDS	ON							
ASSESSMENT:									
CRITICAL: FLIGHT HDW/FUR	r		NCY SCRE	ENS C	CIL ITEM				
NASA [ 2 /1R IOA [ 2 /1R	] [ P	]	[ P ] [ P ]	[ P ] [ P ]	[ X ] *				
COMPARE [ /	] [	]	[ ]	[ ]	[ ]				
RECOMMENDATIONS:	(If dif	ferent	from NAS	SA)					
[ /	] [	]	[ ]	[ ]	[ ] OD/DELETE)				
* CIL RETENTION F	RATIONALE:	(If a	pplicable	≥) ADEQUATE INADEQUATE	[ X ]				

ASSESSMENT DATE: ASSESSMENT ID: NASA FMEA #:	1/08/87 HYDWSB-47 02-6-E23-	YDWSB-477 BASELIN 2-6-E23-2 NE									
SUBSYSTEM: MDAC ID: ITEM:	HYD/WSB 477 PRIORITY	VALVE									
LEAD ANALYST:	W. DAVIDS	ОИ									
ASSESSMENT:											
CRITICAL: FLIGHT		EDUNDANC	Y SCREE	NS	CIL ITEM						
HDW/FUI			В	С							
NASA [ 2 /1R IOA [ 2 /1R	] [ P	] [	P ] P ]	[ P ] [ P ]	[ X ] * [ X ]						
COMPARE [ /	] [	] [	]	[ ]	[ ]						
RECOMMENDATIONS:	(If dif	ferent f	rom NAS	A)							
[ /	] [	] [	]	[ ] A) . (A	[ ] DD/DELETE)						
* CIL RETENTION 1	RATIONALE:	(If app		) ADEQUATE INADEQUATE	[ X ]						
REMARKS:				IDLQUIII	L J						

ASSESSMENT DATE: ASSESSMENT ID: NASA FMEA #:	1/08/87 HYDWSB-478 02-6-E12-1		ATA: INE [ ] NEW [ X ]
SUBSYSTEM: MDAC ID: ITEM:	HYD/WSB 478 ACCUMULATOR	DUMP VALVE	
LEAD ANALYST:	W. DAVIDSON		
ASSESSMENT:			
CRITICAL		NDANCY SCREENS	CIL ITEM
FLIGH' HDW/FU	_	ВС	IIEM
NASA [ 3 /3 IOA [ 2 /1R	] [ NA] ] [ P ]	[ NA] [ NA] [ P ] [ P ]	[ ] *
COMPARE [ N /N	] [ N ]	[и] [и]	[ ]
RECOMMENDATIONS:	(If differ	ent from NASA)	
[ /	] [ ]	[ ] [ ]	[ ] (ADD/DELETE)
* CIL RETENTION	RATIONALE: (I	f applicable) ADEQUA' INADEQUA'	
REMARKS: AGREE WITH NASA TIME OF TOA ANAL		INADEQUATE INFORMATION	ON AVAILABLE AT

ASSESSMENT DA ASSESSMENT II NASA FMEA #:	): H	IYDWSB-4	708/87       NASA DATA:         ZDWSB-479       BASELINE [ ]         2-6-C07-2       NEW [ X ]											
SUBSYSTEM: MDAC ID: ITEM:	4	IYD/WSB 179 LANDING	GEAR	ISOLA'	rion	VALVE								
LEAD ANALYST	. W	v. DAVII	SON											
ASSESSMENT:														
	CALIT	ľY	REDU	NDANCY	SCRI	EENS		CIL	ſ					
	LIGHT N/FUNC	2	A	В		C		1111	•					
	/1R ] /1R ]		P ] P ]	[ P [ P	]	[ P [ P	]	[ X	] * ]					
COMPARE [	/ ]	1 [	]	[	]	C	]	Ţ	]					
RECOMMENDATION OF THE PROPERTY	ons:	(If di	ffer	ent fr	om Ni	ASA)								
[	/ ]	] [	]	[	]	[	] (A	[ DD/DE	] ELETE)					
* CIL RETENT	ION RA	ATIONALI	E: (I	f appl:	icab	AD	EQUATE EQUATE	x ]	]					
FMEA 02-6-CO	7-2 IN	NCORPORA	ATES :	MDAC I	o's	479 AN	D 480.							

ASSESSME ASSESSME NASA FME	TN	II		HY	1/08/87 NASA DATA HYDWSB-480 BASELINI 02-6-C07-2 NEV									. [	x	]			
SUBSYSTE MDAC ID: ITEM:				48			GI	EAR	ISC	OLA:	rio	N VA	LV	E					
LEAD ANA	LYS	T:	:	W.	DAY	/I	DSC	N											
ASSESSME	NT:																		
			CAL LIGH		?		RI	EDUI	NDAI	1CY	sc	REEN	s				IL TE		
			/FUI		_		A			В			C			_		•	
NASA IOA	]	2 2	/1R /1R	]		[	P P	]		[ P	]	[	P P	]		[	X X	]	*
COMPARE	[		/	]		[		]	1	[	]	[		]		[		]	
RECOMMEN	DAT	'IC	ns:		(If	<b>d</b> :	ifi	fere	ent	fro	m	NASA	)						
	ľ		/	]		[		]		[	]	[		]	(A	] ,DD,	/D	] ELI	ETE)
* CIL RE	TEN	TI	ON 1	RAT	CION	\L	E:	(I:	f ar	ppl:	ica				JATE JATE	[	x	]	
REMARKS: FMEA 02-		:07	7-2	INC	ORPO	)R	ATI	es n	MDAC	: II	o's	479	Al	ND 4	180.				

ASSESSMENT D. ASSESSMENT I NASA FMEA #:	• •	-481		NASA DAT BASELIN NE	E [ ]
SUBSYSTEM: MDAC ID: ITEM:	HYD/WS 481 LANDIN		SOLATION	VALVE	
LEAD ANALYST	: W. DAV	IDSON			
ASSESSMENT:					
F	ICALITY LIGHT W/FUNC	REDUND A	ANCY SCRE	eens C	CIL ITEM
	/1R ] /1R ]	[ P ]	[ P ] [ P ]	[ P ] [ P ]	[ X ] * [ X ]
COMPARE [	/ 1	[ ]	[ ]	[ ]	[ ]
RECOMMENDATION	ONS: (If	differen	t from NA	SA)	
[	/ 1	[ ]	[ ]	[ ]	[ ADD/DELETE
* CIL RETENT	ION RATIONA	LE: (If	applicabl	e) ADEQUATE INADEQUATE	

FMEA 02-6-CO7-1 INCORPORATES MDAC ID'S 481 AND 482.

ASSESSMENT DATE ASSESSMENT ID: NASA FMEA #:	: 1/08/87 HYDWSB- 02-6-C0										
SUBSYSTEM: MDAC ID: ITEM:	HYD/WSB 482 LANDING	GEAR	ISOLATION	VALVE							
LEAD ANALYST:	W. DAVI	DSON									
ASSESSMENT:											
CRITICA FLIG		REDUN	DANCY SCR	EENS	CIL ITEM						
HDW/F	UNC	A	В	С							
NASA [ 2 /1 IOA [ 2 /1	R ] [ R ] [	P ] P ]	[ P ] [ P ]	[ P ] [ P ]	[ X ] * [ X ]						
COMPARE [ /	] [	]	[ ]	[ ]	[ ]						
RECOMMENDATIONS	: (If d	iffere	nt from N	ASA)	e.						
[ /	] [	]	[ ]	[ ] <b>(A</b>	[ ] ADD/DELETE)						
* CIL RETENTION	RATIONAL	E: (If	applicab	le) ADEQUATE INADEQUATE							
REMARKS: FMEA 02-6-C07-1	INCORPOR	ATES M	DAC ID'S	481 AND 482.							

ASSESSMENT DATE: ASSESSMENT ID: NASA FMEA #:		183		NASA DATA BASELINE NEW		
	HYD/WSB 483 LANDING	GEAR IS	OLATION V	<b>VALVE</b>		
LEAD ANALYST:	W. DAVI	NOSC				
ASSESSMENT:						
CRITICAL FLIGH		REDUNDA	ANCY SCREI	ens	CIL ITEM	
HDW/FU		В	С	111211		
NASA [ / IOA [ 3 /3	] [	NA]	[ ] [ NA ]	[ NA]	[ ] *	
COMPARE [ N /N	] [	N ]	[ N ]	[ N ]	[ ]	
RECOMMENDATIONS:	(If d	ifferent	from NAS	SA)		
	] [	1	[ ]	[ ] <b>(A</b> )	[ ] DD/DELET	E)
* CIL RETENTION	RATIONAL	E: (If a	applicable			
				ADEQUATE INADEQUATE	[ ]	
REMARKS: RECOMMEND DELETI MAKES IT NON-THR	NG THIS EATENING	FAILURE	(MDAC ID	483). VALV	E DESIGN	

ASSESSME ASSESSME NASA FME	NT I	D:	1/08/8 HYDWSI 02-6-8	3-48					NASA DAT BASELIN		x	]	
SUBSYSTEM MDAC ID:	M:		HYD/WS 484 LANDIN		EAR	ISOLA	TION '	VAI	VE				
LEAD ANA	LYST	:	W. DAY	/IDS	ON								
ASSESSME	NT:												
,	F	'ICALI 'LIGH'I W/FUN	ŗ	F		DANCY B	SCRE	ENS	c C	_	IL TEN	1	
NASA IOA		/1R /1R	]	[ ] [ ]	, ]	[ P	]	[	P ] P ]	[	X X	]	*
COMPARE	[	/	]	[	]	[	]	[	]	[		]	
RECOMMEN	DATI	ons:	(If	dif	fere	nt fr	om NA	SA)					
	[	/	]	[	1	[	3	[	1	] (ADD)	/DI	] ELF	ETE
* CIL RE	TENT	ION F	RATION	ALE:	(If	appl	icabl		ADEQUATI IADEQUATI		x	]	
*/************************************													

ASSESSME ASSESSME NASA FME	NT ID:		485	NASA DATA: BASELINE [ ] NEW [ X ]						
SUBSYSTE MDAC ID: ITEM:		HYD/WSB 485 LANDING		ISOLATION	VALVE POS.	INDIC	ATION			
LEAD ANA	LYST:	W. DAVI	DSON							
ASSESSME	NT:									
			REDU	NDANCY SCRI	EENS	CIL				
	FLIGH HDW/FU	_	A	В	C	ITE	M			
NASA IOA	[ / [ 3 /3	] [	NA]	[ ] [ NA ]	[ ] [ NA]	[ [	] *			
COMPARE	[ N /N	] [	и ј	[и]	[ N ]	[	]			
		•		ent from N						
	[ / / .	) [	]	[ ]	[ ] (	[ ADD/D	] ELETE)			
* CIL RE	TENTION :	RATIONAL	E: (I1	f applicab						
		. V=. 4			ADEQUATE INADEQUATE	]	]			
LANDING	GEAR ISO	-VALVE "	FAILS	TO OPEN"	COVER THIS F (FMEA 02-6-C CRITICALITY	AILUR 07-2)	E.			

ASSESSME ASSESSME NASA FME	NT	II		HYI	08/87 NASA DATA: DWSB-486 BASELINE [ ] -6-G13-2 NEW [ X ]																	
SUBSYSTE MDAC ID: ITEM:				486	O/WSI 5 NDING		GE	AR	со	N'I	RC	)L	UP/	'C]	RC	2.	SOL	ENC	ΙΙ	<i>7</i> C	7AI	.VE
LEAD ANA	LY	ST	:	W.	DAV	ΙD	so	N														
ASSESSME	NT	:																				
	CR		ICALI				RE	DU	ADN	NC	Y.	s	CREE	NS	3					L EM	r	
	1		W/FUI	_			A				В				С				11	LEI		
NASA IOA	•		/1R /1R	]			P P	]		[	F F	]		[	P P	]			[	X X	] ]	*
COMPARE	[	N	/	3	į			]		[		]		[		]			Į		]	
RECOMMEN	DA!	rio	ons:		(If d	li	ff	ere	ent	. 1	rc	m	NAS	A)	I							
	[	2	/1R	]	[			]		[		]		[		]		(AD	[ D/	/DE	] LE	TE)
* CIL RE	TE	VT:	ION I	RAT:	IONAI	ĿΕ	:	(I:	f a	pŗ	)lj	LCa	able				TAU( TAU(		[	x	]	
REMARKS: THE IOA UNLOCK M																						

ASSESSMENT DATE: ASSESSMENT ID: NASA FMEA #:			NASA DATA: BASELINE [ ] NEW [ X ]							
SUBSYSTEM: MDAC ID: ITEM:	HYD/WSB 487 LANDING	GEAR CONTROL UP/C	CIRC. SOLENC	OID VALVE						
LEAD ANALYST:	W. DAVI	DSON		a de e						
ASSESSMENT:										
CRITICAL FLIGH		REDUNDANCY SCREEN	ıs	CIL ITEM						
HDW/FU		A B	C	TIEM						
NASA [ / IOA [ 2 /1R	] [	] [ ] [ P ] [ F ]	p ]	[ x ] *						
COMPARE [ N /N	] [	и] [и] [	ן א ן	[и]						
RECOMMENDATIONS:	(If d	ifferent from NASA	7)	-						
[ 2 /1R	1 [	P] [F] [		[ A ] DD/DELETE)						
* CIL RETENTION	RATIONAL	E: (If applicable)	ADEQUATE	r 1						
	·	I	NADEQUATE							
THE VALVE FAILS	TO CLOSE	13-3. THIS FMEA S ON THE GOUND AND OULD HAVE A FLIGHT	REMAINED IN	THE OPEN						

ASSESSMI ASSESSMI NASA FMI	ENT	ID:	1/08, HYDW: 02-6	SB-4				NASA DATA: BASELINE [ ] NEW [ X ]						
SUBSYSTE MDAC ID:			HYD/1 488 LAND		GEAR	CONT		P/CII	RC. SOL	ENOID	VALVE			
LEAD ANA	ALYS	T:	W. D	AVID	SON									
ASSESSMI	ENT:			7										
		TICAL: FLIGH	r		REDUI A	NDANC'	y scr B	EENS	2	CI IT				
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	1/08/87 HYDWSB-489 02-6-SYSTE		NASA DATA: BASELINE [ ] NEW [ X ]									
SUBSYSTEM: MDAC ID: ITEM:	HYD/WSB 489 LANDING GE	EAR CONTRO	ol up/circ soleno	ID VALVE								
LEAD ANALYST:	W. DAVIDSO	М										
ASSESSMENT:												
CRITICALITY REDUNDANCY SCREENS CIL FLIGHT ITEM												
HDW/FU		В	c	IICM								
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* CIL RETENTION RATIONALE: (If applicable)  ADEQUATE [ X ] INADEQUATE [ ]												
A SECOND FMEA SH	REMARKS: A SECOND FMEA SHOULD BE WRITTEN TO COVER EXTERNAL LEAKS THAT ARE NOT DETECTABLE DURING FLIGHT PER DOC. 22206 DEFINITION./											

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SUBSYSTI MDAC ID ITEM:				49			ror,	НУ	DR	AU:	LIC	<b>3,</b> 1	L.(	3.	RETRA	СТ	L	[NI	€	
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ASSESSM	ENT	:																		
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ASSESSMENT DATE: ASSESSMENT ID: NASA FMEA #:	1/08/87 HYDWSB-491 02-6-G02-1		ATA: INE [ ] NEW [ X ]
SUBSYSTEM: MDAC ID: ITEM: OPERATED	HYD/WSB 491 LANDING GEAR	CONTROL VALVE-2POS,	3WAY, SOLENOID
LEAD ANALYST:	W. DAVIDSON		
ASSESSMENT:			
CRITICAL: FLIGHT		NDANCY SCREENS	CIL ITEM
HDW/FUI		в с	
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SUBSYSTI MDAC ID: ITEM: OPERATE	•	49		GEAR	CONT	ROL V	VALVI	E-2POS,	3WAY,	SOL	ENOID
LEAD AND	ALYST:	W.	DAVI	DSON							
ASSESSMI	ENT:										
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ASSESSMENT DATE: ASSESSMENT ID: NASA FMEA #:	1/08/87 HYDWSB-493 02-6-G02-3	NASA DA BASELI N	
SUBSYSTEM: MDAC ID: ITEM: OPERATED	HYD/WSB 493 LANDING GEAR	CONTROL VALVE-2POS,	3WAY, SOLENOID
LEAD ANALYST:	W. DAVIDSON		
ASSESSMENT:			•
CRITICAL FLIGH		NDANCY SCREENS	CIL ITEM
HDW/FU		ВС	- -
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SUBSYSTE MDAC ID: ITEM: SOLENOID			HYD/ 494 LAND		EAR	CONTRO	OL '	VALVE - 2	POS,	3 WA	ΛΥ,
LEAD ANA	LYST	:	W. D	AVIDS	ON						
ASSESSME	NT:							•			
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SUBSYSTEM: MDAC ID: ITEM:	HYD/WSB 495 MPS/TVC SI	HUTOFF VA	LVE		
LEAD ANALYST:	W. DAVIDS	ОИ	<u>-</u>		
ASSESSMENT:					
CRITICAL FLIGH HDW/FU	T	EDUNDANCY B	SCREENS	:	CIL
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SUBSYSTE MDAC ID: ITEM:			HYD/W 496 MPS/T		SHUTC	FF VA	LVE							
LEAD ANA	LYS	T:	W. DA	VIDS	SON									
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		TICAL FLIGH DW/FU	r	1		IDANCY E			2		CI	CL CEM	Ī	
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ASSESSME	NT:																
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ASSESSMENT DATE: ASSESSMENT ID: NASA FMEA #:	HYDWSB-601		NASA DATA BASELINE NEW	
	HYD/WSB 601 PUMP (MECHANI	CAL)	\$177B	
LEAD ANALYST:	W. E. PARKMAN	Ī		
ASSESSMENT:				
CRITICAL: FLIGH	ITY REDUN	IDANCY SCRE	ENS	CIL ITEM
HDW/FU		В	C	
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LEAD ANA	LY	ST	:	W.	E.	P	ARI	KMA	AN .										
ASSESSME	NT	:																	
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SUBSYSTEMDAC ID:	м:		HYD/W 603 DEPRE		IZAT	ON V	ALVE							
LEAD ANA	LYST	:	W. E.	PAR	KMAN	ſ								
ASSESSME	NT:													
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LEAD ANA	LYST	:	W.	E.	P	ARI	KMAN	ſ											
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SUBSYSTEM: MDAC ID: ITEM:	:	HYD/WS 605 DEPRES		ZATIO	ON V	ALVE				
LEAD ANALY	ST:	W. E.	PARI	MAN						
ASSESSMENT	r:									
CF	RITICAL: FLIGHT HDW/FUI	r	RI A	EDUND!	ANCY B	SCREI	ENS C		CIL	
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	1/08/87 HYDWSB-606 02-6-E06-1		NASA DATA BASELINE NEW	[ ]
MDAC ID:	HYD/WSB 606 DEPRESSURIZA	ATION VALVE		
LEAD ANALYST:	W. E. PARKM	AN		
ASSESSMENT:				
CRITICALI FLIGHT HDW/FUN	1	UNDANCY SCREE	ens C	CIL ITEM
NASA [ 2 /1R IOA [ 2 /1R	] [ P ] ] [ P ]	[ P ] [ P ]	[ P ] [ P ]	[ X ] *
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SUBSYSTEM: MDAC ID: ITEM:	HYD/WSB 607 DEPRESSU	RIZATIO	ON VALVE		
LEAD ANALYST:	W. E. PA	RKMAN			
ASSESSMENT:					
CRITICAL FLIGH	T		NCY SCREI		CIL ITEM
HDW/FU	NC	A	В	С	
NASA [ 2 /1R IOA [ 2 /1R	] [	P ] P ]	[ P ] [ P ]	[ P ] [ P ]	[ X ] *
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SUBSYSTEM MDAC ID:	M:		HYD/WS 609 PRESSU		COMP	ENSAT	or s	POOL	VALVE					
LEAD ANA	LYST	! <b>:</b>	W. E.	PAI	RKMAN									
ASSESSME	T:												== +	
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	HD	W/FUN	1C	1	7	В		C	2		-			
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SUBSYSTE MDAC ID: ITEM:	M:			61			e (	COMPI	ens	AT(	OR SP	00:	<b>L</b> 7	<b>VALVE</b>					
LEAD ANA	LY	ST	:	w.	E.	P	ARI	KMAN											
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SUBSYSTEMDAC ID:	M:		HYD/WS 611 PRESSU		COMP	ENSAT	or sp	001	. VALVE		
LEAD ANA	Lyst	:	W. E.	PAF	RKMAN	•					
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REMARKS:											

	1/08/87 HYDWSB-612 02-6-E30-2		NASA DATA BASELINE NEW	
	HYD/WSB 612 FLEX HOSE	(SUCTION)	·	
LEAD ANALYST:	W. E. PARK	MAN		· <del></del> ··
ASSESSMENT:				
CRITICAL: FLIGH		DUNDANCY SCRE		CIL ITEM
HDW/FU	NC A	В	C	
NASA [ 2 /1R IOA [ 2 /1R	] [ P ]	] [ P ] ] [ P ]	[ P ] [ P ]	[ X ] * [ X ]
COMPARE [ /	] [	] [ ]	[ ]	[ ]
RECOMMENDATIONS:	(If diffe	erent from NA	SA)	
, I	1 C	] [ ]	[ ] (A	[ ] DD/DELETE)
* CIL RETENTION	RATIONALE:	(If applicabl	ADEQUATE	
REMARKS:			INADEQUATE	įj

ASSESSMEN ASSESSMEN NASA FME	NT II	<b>):</b>	1/08/8 HYDWSI 02-6-I	B-61					NASA DAT BASELIN NE		X	]	
SUBSYSTEM MDAC ID:	M:		HYD/WS 613 FLEX H		(SUP	PLY)							
LEAD ANA	LYST:	:	W. E.	PAR	KMAN								
ASSESSME	NT:												
(		CALI LIGHT N/FUN	r .	Ri A		ancy B	SCREI	ENS	c	-	IL TE		
NASA IOA	[ 2 [ 2	/1R /1R	]	[ P	]	[ P	]	[	P ] P ]	[	X	]	*
COMPARE	[	/	3	[	]	[	]	[	3	[		]	
RECOMMENI	DATIC	ons:	(If	dif	feren	t fr	om NAS	5 <b>A</b> )	)				
	ľ	/	]	[	]	[	]	[	] (	] Ada	)/D	ELI	ete)
* CIL RET	renti	ON F	RATION	ALE:	(If	appl:	icable	·	ADEQUATE IADEQUATE		x	]	
REMARKS:									~ <del>~</del> <del>-</del> -	٠		•	

ASSESSMENT DATE: ASSESSMENT ID: NASA FMEA #:	1/08/87 HYDWSB-614 02-6-E30-2		NASA DATA: BASELINE NEW	
SUBSYSTEM: MDAC ID: ITEM:	HYD/WSB 614 FLEX HOSE (CAS	SE)		
LEAD ANALYST:	W. E. PARKMAN			
ASSESSMENT:				
CRITICAL: FLIGH HDW/FU	T	DANCY SCREEN B	c C	CIL ITEM
NASA [ 2 /1R IOA [ 2 /1R	] [ P ] ] [ P ]	[ P ] [ [ P ] [	P ] P ]	[ X ] *
COMPARE [ /	] [ ]	[ ] [	]	[ ]
RECOMMENDATIONS:	(If differe	nt from NASA	.)	
1	] [ ]	[ ] [	] (Al	[ ] OD/DELETE
* CIL RETENTION TREMARKS:	RATIONALE: (If		ADEQUATE NADEQUATE	[ x ]

ASSESSMENT DATE: 1/08/87 ASSESSMENT ID: HYDWSB-615 NASA FMEA #: 02-6-E04-1									NASA D	INE	[	x	]	
SUBSYSTE MDAC ID: ITEM:			HYD/ 615 SHAF		EAL DR	AIN	PORT							
LEAD ANA	LYST	<b>':</b>	W. E	. P	ARKMAN	•								
ASSESSME	NT:													
	F	'ICAL 'LIGH' W/FU	r		REDUN A	DANG	EY SCR	EENS	c c		CI	L EM		
NASA IOA	[ 3	/3 /3	]	[	NA] NA]	[	NA] NA]	[	NA] NA]		[		]	*
COMPARE	[	/	]	[	]	[	1	[	]		[		]	
RECOMMEN	DATI	ONS:	(I	f d	iffere	nt f	rom N	ASA)						
	[	/	]	[	1	[	]	[	]	(AD		DE		TE
* CIL RE	TENT	ON :	RATIC	NAL	E: (If	app	olicab		ADEQUA'		[		]	
*/*:ILIEJY/Y/CO *														

			1	NASA DATA: BASELINE NEW		
	HYD/WSB 619 CHECK VALV	Œ (SUPPL)	<i>(</i> )			
LEAD ANALYST:	W. E. PARK	MAN				
ASSESSMENT:						
FLIGHT					CIL ITEM	
HDW/FUN	IC A	В	•	С		
NASA [ 2 /1R IOA [ 2 /1R	] [ P ] [ P	] [ F ] [ P	] []	P ] P ]	[ X ]	*
COMPARE [ /	] [	] [ N	] [	]	[ Ĵ	2 * 2
RECOMMENDATIONS:	(If diff	erent fro	om NASA)			
·	] [	] [	] [	] (Al	[ ]	
* CIL RETENTION F	RATIONALE:	(If appl:		ADEQUATE ADEQUAȚE		
REMARKS: IOA CONCURS WITH TIME FACTOR.	NASA SCREE	EN B RATIO	ONALE.	HAD NOT CO	ONSIDE	RED

ASSESSMEN ASSESSMEN NASA FME	II TV	D:		B-62					NASA DAT BASELIN NE			x	]	
SUBSYSTEM MDAC ID: ITEM:	<b>4:</b>		HYD/WS 620 CHECK		VE (	SUPPL	Y)							
LEAD ANAI	LYST	:	W. E.	PAR	KMAN	Ī								
ASSESSMEN	NT:			•										
	FI	ICALI LIGHT W/FUN	ŗ	F A		DANCY B	SCRE	ENS	c c		CI I'I	LEM	1	
NASA IOA	[ 2 [ 2	/1R /1R	]	[ P	) ]	[ P	]	[	P ] P ]		[	x x	]	*
COMPARE	[	/	]	[	J	[	]	[	]		[		]	
RECOMMENI	OITAC	ons:	(If	dif	fere	nt fr	om NA	SA)						
	[	./	]	[	]	[	]	[	] (	AD	[ D/	'DE	] :LE	ETE)
* CIL RET	(ENT	ION F	RATION	ALE:	(If	appl	icabl		ADEQUATE IADEQUATE	<u>;</u>	[	X	]	
REMARKS:										= '	•		•	

ASSESSMENT DATE: ASSESSMENT ID: NASA FMEA #:	HYDWSB-621	NASA DATA: BASELINE [ ] NEW [ X ]							
	HYD/WSB 621 CHECK VALVE	(CASE)							
LEAD ANALYST:	W. E. PARKMAI	N							
ASSESSMENT:									
CRITICAL FLIGH	ITY REDUI	NDANCY SCREI	ENS	CIL ITEM					
HDW/FU	NC A	В	С						
NASA [ 3 /3 IOA [ 2 /1R	] [ NA] ] [ NA]	[ NA] [ NA]	[ NA] [ NA]	[ x ] *					
COMPARE [ N /N	] [ ]	[ ]	[ ]	[ N ]					
RECOMMENDATIONS:	(If differe	ent from NAS	5A)						
[ /	] [ ]	[ ]	[ ] (A	[ ] .DD/DELETE)					
* CIL RETENTION	RATIONALE: (I	f applicable	e) ADEQUATE	r 1					
			INADEQUATE	į					
REMARKS: AGREE WITH NASA CREDIBLE, SINCE									

ASSESSMEN ASSESSMEN NASA FMEA	II TN	D:	HYDW	SB	-622				NASA DAT BASELII NI			
SUBSYSTEM MDAC ID:	M:		HYD/ 622 CHEC		B VALVE	(CAS	E)					
LEAD ANA	LYST	:	W. E	:	PARKM	AN						
ASSESSME	NT:											
(	F	LIGH			REDI A	JNDAN(	CY SC	REENS	S C	CI	L EM	
	ועת	/FUI										
NASA IOA	[ 3	/3 /3	]		[ NA] [ NA]	[	NA]	[	NA] NA]	[	]	*
COMPARE	[	/	3		[ ]	[	)	[	]	[	]	
RECOMMEN	DATI	ons:	(1	f	diffe	rent :	from 1	nasa)	)			
	[	/	]		נ ז	C	]	[	1		DELE	TE)
* CIL RET	rent:	ION I	RATIC	NA:	LE: (	If app	plica		ADEQUATI ADEQUATI	] E	]	
REMARKS:											_	

ASSESSMENT DATA ASSESSMENT ID: NASA FMEA #:	: HYDWS			BASELINI NE	
SUBSYSTEM: MDAC ID: ITEM:	HYD/W 623 CHECK	SB VALVE (C	ASE)		
LEAD ANALYST:	W. E.	PARKMAN		÷	
ASSESSMENT:				-	
	CALITY IGHT	REDUNDA	ANCY SCRI	EENS	CIL ITEM
	/FUNC	A	В	С	
NASA [ 2 /	/1R ] /1R ]	[ P ] [ P ]	[ P ] [ P ]	[ P ] [ P ]	[ X ] * [ X ]
COMPARE [	/ 1	[ ]	[ ]	[ ]	[ ]
RECOMMENDATION	NS: (If	different	t from N	ASA)	
	/ ]	[ ]	[ ]	[ ] (	[ ] ADD/DELETE)
* CIL RETENTION	ON RATION	ALE: (If a	applicab:	le) ADEQUATE INADEQUATE	
REMARKS:	-			INADEGOVIE	ι ,

HYDWSB-	-624					BASELIN		[	X	]	
624		RESEF	RVOII	₹							
W. E. 1	PARK	MAM									
T	RE A	DUND	ancy B	SCRE	ENS	c				ſ	
]	[ P	]	[ P	]	[	P ] P ]		]	X X	]	*
]	[	]	[	1	[	1		[		]	
(If o	diff	erent	: fr	om NAS	SA)	1					
]	[	]	[	]	[	] (	(AI	[ DD/	'DI	] EĻI	ETE)
RATIONA)	LE:	(If ā	appl:	icable				[	x	]	
	HYDWSB 02-6-E HYD/WS 624 HYDRAU W. E. ITY T NC	O2-6-E03-5  HYD/WSB 624 HYDRAULIC  W. E. PARK  ITY RE T NC A  [ P ] [ P ] [ P ] [ [ P	HYDWSB-624 02-6-E03-5  HYD/WSB 624 HYDRAULIC RESERVAN  ITY REDUNDAT  TO A  [ P ] [ P ] [ P ] [ ]  (If different ]	HYDWSB-624 02-6-E03-5  HYD/WSB 624 HYDRAULIC RESERVOID  W. E. PARKMAN  TY REDUNDANCY T A B  [ P ] [ P ]  [ P ] [ P ]  [ P ] [ P ]  [ I ] [ P ]  (If different from the second sec	HYDWSB-624 02-6-E03-5  HYD/WSB 624 HYDRAULIC RESERVOIR  W. E. PARKMAN  ATT REDUNDANCY SCREEN TO A B  [ P ] [ P ] [ P ] [ P ] [ I ]  (If different from NAS) ] [ ] [ ]	HYDWSB-624 02-6-E03-5  HYD/WSB 624 HYDRAULIC RESERVOIR  W. E. PARKMAN  TY REDUNDANCY SCREENS T NC A B  [ P ] [ P ] [ P ] [ ] [ P ] [ P ] [ ] [ ] [ ] [  (If different from NASA) ] [ ] [ ] [ RATIONALE: (If applicable)	HYDWSB-624 02-6-E03-5  HYD/WSB 624 HYDRAULIC RESERVOIR  W. E. PARKMAN  ITY REDUNDANCY SCREENS T NC A B C  [ P ] [ P ] [ P ]  [ P ] [ P ]  [ P ] [ P ]  [ I ] [ I ]  (If different from NASA)  ] [ ] [ ] [ ]  RATIONALE: (If applicable)  ADEQUATE	HYDWSB-624 02-6-E03-5  HYD/WSB 624 HYDRAULIC RESERVOIR  W. E. PARKMAN  ITY REDUNDANCY SCREENS T NC A B C  [ P ] [ P ] [ P ]	HYDWSB-624 02-6-E03-5  HYD/WSB 624 HYDRAULIC RESERVOIR  W. E. PARKMAN  ATTY REDUNDANCY SCREENS T IT NC A B C  [P] [MITH COMMON	HYDWSB-624 02-6-E03-5  HYD/WSB 624 HYDRAULIC RESERVOIR  W. E. PARKMAN  ITY REDUNDANCY SCREENS  T ITEN NC A B C  [ P ] [ P ] [ P ] [ Y ]	HYDWSB-624 02-6-E03-5  HYD/WSB 624 HYDRAULIC RESERVOIR  W. E. PARKMAN  ITY REDUNDANCY SCREENS T ITEM NC A B C  [ P ] [ P ] [ P ] [ X ] ] [ P ] [ P ] [ X ] ] [ P ] [ P ] [ Y ] [ ITEM  (If different from NASA)  ] [ ] [ ] [ ] [ ]  RATIONALE: (If applicable)  ADEQUATE [ X ]

ASSESSME ASSESSME NASA FME	NT	ID				3/87 NSB-625						NASA DATA: BASELINE [ NEW [ ]							x	]			
SUBSYSTE MDAC ID:				62			c	RES	ER	VC	)IF	<b>R</b>											
LEAD ANA	LYS	T:		w.	E.	PA	\RI	NAM	ſ														
ASSESSME	NT:																						
			CAL:				RE	EDUN	[DA]	NC	Y	SCI	REEI	S	;				CI IT	L EM	ľ		
			/FUI				A				В				C								
NASA IOA	] -	2	/ /1R	]		[	P	]		[	P	]		[ [	P	]			֝֝֟֝֟֝֝֟֝֝֟֝֝֟֝֝֟֝֟֝֟֝֟֝֟֝֟֞֝֟֞֝֟֞֝֟֞֟֝֟֞֟֞֟֞֝֟֞֞֟֞֩֞֟֞֞֩֞֞	x	]	*	
COMPARE	[	N	/N	]		[	N	]		[	N	]		(	N	]			[	N	]		
RECOMMEN	DAT	'IC	NS:		(If	đi	Ĺfí	ere	nt	f	r	om 1	NAS	A)									
	[		/	]		[		]		[		]		[		]	(2	AD:	[ D/	DE	] :LE	ETE)	i
* CIL RE	TEN	TI	ON I	RAT	ION	ALI	Ξ:	(If	<b>a</b> j	ÞF	11	cak					JATE JATE		[		]		
REMARKS: DELETE T BE GREAT														SE	R	70IF	R PR	ES	SU	RE	: S	ноц	JLC

ASSESSMENT DATE: ASSESSMENT ID: NASA FMEA #:	1/08/87 HYDWSB-620 02-6-E03-			ASA DATA: BASELINE NEW	
SUBSYSTEM: MDAC ID: ITEM:	HYD/WSB 626 HYDRAULIC	RESERVOI	₹		
LEAD ANALYST:	W. E. PAR	KMAN			
ASSESSMENT:					
CRITICALI FLIGHT HDW/FUN	r	EDUNDANCY B	SCREENS C		CIL
NASA [ 2 /1R IOA [ 2 /1R	] [ P	] [ P	] [ P	]	[ X ] *
COMPARE [ /	] [	] [	] [	1	[ ]
RECOMMENDATIONS:	(If dif	ferent fro	om NASA)		
[ /	] [	] [	] [	] (AI	[ ] DD/DELETE
* CIL RETENTION I	RATIONALE:	(If appli	Al	DEQUATE DEQUATE	[ x ]

	1/08/87 HYDWSB-62 02-6-E03-		BASELI		
SUBSYSTEM: MDAC ID: ITEM:	HYD/WSB 627 HYDRAULIC	RESEF	RVOIR		•
LEAD ANALYST:	W. E. PAR	KMAN		•	
ASSESSMENT:					
CRITICAL FLIGH		REDUNDA	NCY SCRI	EENS	CIL ITEM
HDW/FU		<b>\</b>	В	С	
NASA [ 2 /1R IOA [ 2 /1R	[ F	) ]	[ P ] [ P ]	[ P ] [ P ]	[ X ] * [ X ]
COMPARE [ /	] [	]	[ ]	[ ]	[ ]
RECOMMENDATIONS:	(If dif	ferent	from N	ASA)	
	] [	]	[ ]	[ ]	[ ] (ADD/DELETE)
* CIL RETENTION	RATIONALE:	(If a	applicab	le) ADEQUA:	re [X]
REMARKS:			·	INADEQUA	re [ ]

ASSESSMENT DATE ASSESSMENT ID: NASA FMEA #:	: 1/08/8 HYDWS!			NASA DA' BASELII N	
SUBSYSTEM: MDAC ID: ITEM:	HYD/WS 628 LOW PR		RELIEF VA	LVE	
LEAD ANALYST:	W. E.	PARKMAN			
ASSESSMENT:					
CRITICA FLIC		REDUND	ANCY SCR	EENS	CIL ITEM
HDW/I		A	В	C	
NASA [ / IOA [ 2 /1	.R ]	[ P ]	[ P ]	[ ] [ P ]	[ x ] *
COMPARE [ N /N	<b>,</b> ]	[ N ]	[ N ]	[ N ]	[ N ]
RECOMMENDATIONS	: (If	differen	t from N	ASA)	
[ 3 /1	.R ]	[ P ]	[ P ]	[ P ]	[ (ADD/DELETE
* CIL RETENTION	RATIONA	ALE: (If	applicab	le) ADEQUATI INADEQUATI	
REMARKS: IOA RECOMMENDS	THAT A F	MEA BE C	REATED TO	O COVER THIS	FAILURE.

ASSESSMENT DATE: ASSESSMENT ID: NASA FMEA #:	1/08/87 HYDWSB-629 02-6-SYSTEM-2		ASA DATA: BASELINE [ ] NEW [ X ]
SUBSYSTEM: MDAC ID: ITEM:	HYD/WSB 629 LOW PRESSURE F	ELIEF VALVE	
LEAD ANALYST:	W. E. PARKMAN		
ASSESSMENT:			
CRITICAL FLIGH HDW/FU	T	DANCY SCREENS B C	CIL ITEM
NASA [ 2 /1R IOA [ 2 /1R	] [P]	[ P ] [ P ]	] [ X ] *
COMPARE [ /	] [ ]	[ ] [	] [ ]
RECOMMENDATIONS:	(If differer	nt from NASA)	
[ /	] [ ]	[ ] [	[ ] (ADD/DELETE)
* CIL RETENTION	RATIONALE: (If	A	DEQUATE [ X ] DEQUATE [ ]

REMARKS:

ASSESSMEN	SSESSMENT DATE: 1/08/87 SSESSMENT ID: HYDWSB-630 ASA FMEA #: 02-6-E03-1 UBSYSTEM: HYD/WSB								NASA DAT BASELIN NE		x	]	
SUBSYSTEM MDAC ID: ITEM:	<b>1</b> :		HYD/WS 630 LOW PI		URE 1	RELIE	F VAL	VE					
LEAD ANAI	LYST	?:	W. E.	PAR	KMAN								
ASSESSMEN	T:												
C	F	'ICALI 'LIGHT	7			DANCY B	SCRE		c		IL FEM		
	HD	W/FUN	iC ,	A		D		,	C				
NASA IOA	[ 2 [ 2	/1R /1R	]	[ P	]	[ P	]	[	P ] P ]	[	X X	] :	*
COMPARE	[	/	]	[	1	[	]	[	]	[		]	
RECOMMENI	DATI	ONS:	(If	dif	fere	nt fr	om NA	SA)					
	[	/	1	[	]	[	]	[	] (	[ ADD,		] LE:	re)
* CIL RET	TENT	ION R	RATION	ALE:	(If	appl	icabl		ADEQUATE ADEQUATE		X	]	

REMARKS:

ASSESSMENT DATE: ASSESSMENT ID: NASA FMEA #:	1/08/87 HYDWSB-631 02-6-E03-1		ASA DATA: BASELINE [ ] NEW [ X ]
SUBSYSTEM: MDAC ID: ITEM:	HYD/WSB 631 LOW PRESSURE RI	ELIEF VALVE	
LEAD ANALYST:	W. E. PARKMAN		
ASSESSMENT:	·		
CRITICALI FLIGHT HDW/FUN	r	ANCY SCREENS B C	CIL ITEM
NASA [ 2 /1R IOA [ 2 /1R	] [P]	[ P ] [ P	] [ X ] *
COMPARE [ /	] [ ]	] [ ]	] [ ]
RECOMMENDATIONS:	(If different	t from NASA)	
[ /	] [ ]	[ ] . [	[ ] (ADD/DELETE
* CIL RETENTION I	RATIONALE: (If a	A	DEQUATE [ X ] DEQUATE [ ]

ASSESSME	ASSESSMENT DATE: 1/08/87 ASSESSMENT ID: HYDWSB-632 NASA FMEA #: 02-6-SYSTEM-2 SUBSYSTEM: HYD/WSB										NASA BASE	DATA LINE NEW	[	x	]	
SUBSYSTE MDAC ID:			632			L/B	LEEC	s:	AMPL	E V	ALVE					
LEAD ANA	LYST	<b>!:</b>	W. E	. 1	PAR	KMA	N									
ASSESSME	NT:															
	F	'ICAL 'LIGH' W/FU	T		R) A		NDAN	CY B	SCR	EENS	c C			CL CEN	ſ	
NASA IOA		/1R	]	[	[ P	]	[	P P	]	[	P ] P ]		[	X X	]	*
COMPARE	[	/	]	1	[	]	ι		]	[	]		[		]	
RECOMMEN	DATI	ons:	(1	fc	iif:	fer	ent	fr	om N							
	[	/	1		[	]	. [		]	[	]	(A		/DI		ETE)
* CIL RE	TENT	'ION	RATIC	NAI	LE:	(I -	f ap	pl.	icab		ADEQU NADEQU		[	x	]	

ASSESSMENT DATE: ASSESSMENT ID: NASA FMEA #:	1/08/87 HYDWSB-633 02-6-SYSTEM-2	•	A DATA: SELINE [ ] NEW [ X ]
SUBSYSTEM: MDAC ID: ITEM:	HYD/WSB 633 VERTICAL/BLEE	O SAMPLE VALVE	
LEAD ANALYST:	W. E. PARKMAN		
ASSESSMENT:			
CRITICAI FLIGH HDW/FU	T	DANCY SCREENS B C	CIL ITEM
NASA [ 2 /1F IOA [ 2 /1F	[ P ]	[ P ] [ P ] [ P ]	[ X ] * [ X ]
COMPARE [ /	] [ ]	[ ] [ ]	[ ]
RECOMMENDATIONS:	(If differen	nt from NASA)	
[ /	] [ ]	[ ] [ ]	[ ] (ADD/DELETE)
* CIL RETENTION REMARKS:	RATIONALE: (If		QUATE [ X ]

ASSESSME	ASSESSMENT DATE: 1/08/8 ASSESSMENT ID: HYDWSE NASA FMEA #: 02-6-E SUBSYSTEM: HYD/WS								NASA I BASEI		[	x ]	
SUBSYSTEM MDAC ID:	M:		HYD/W 634 FLUII		LUME	TRANS	SDUCE	R					
LEAD ANA	LYST	<b>':</b>	W. E.	PA	RKMAN	Г							
ASSESSME	NT:												
(	F	ICAL LIGH W/FU			REDUN A		Y SCR B	EENS	c		CI		
NASA IOA	[ 3 [ 3	/3 /3	]	[	NA] NA]	[ ] [ ]	NA] NA]	[	NA] NA]		]	]	*
COMPARE	[	/	1	[	]	C	]	C	]		[	]	
RECOMMEN	DATI	ons:	(If	di	ffere	nt f	rom N	ASA)					
	[	/	]	[	1	[	1	[,	]	(A)		) DELE	TE)
* CIL RE	TENT	'ION	RATION	IALE	: (If	app:	licab		ADEQU <i>I</i> ADEQU <i>I</i>		]	]	
REMARKS:													

ASSESSMI ASSESSMI NASA FMI	ENT 1	D:	HYD	8/87 WSB- 6-E0	635				NASA DAT BASELIN NE	Œ [	]	
SUBSYSTI MDAC ID: ITEM:			635	/WSB ID V		TRA	NSDUCE	R				
LEAD AN	ALYSI	!:	<b>W.</b> 1	E. P.	ARKMA	N						
ASSESSMI	ENT:											
	1	ICAL LIGH	T			NDAN	CY SCR	EEN		CII		
	HI	)W/FU	NC		A		В		С			
NASA IOA	[ 3	3 /3	]	[ [	NA] NA]	]	NA] NA]		NA] NA]	[	]	*
COMPARE	[	/	]	[	]	[	]	[	]	[	)	
RECOMME	NDAT	ons:	(	If d	iffer	ent	from N	(ASA)	)			
·	Ţ	/	]	[	]	[	]	[	] (	[ ADD/I	•	TE
* CIL RI	ETENT	NOI	RATI(	DNAL	E: (I	f ap	plicab	·	ADEQUATE NADEQUATE	-	]	

REMARKS:

ASSESSMI ASSESSMI NASA FMI	ENT I		HYDWSB-636 02-6-E03-4				NASA DATA: BASELINE [ ] NEW [ X ]						
SUBSYSTI MDAC ID: ITEM:			HYD/ 636 FLUI		UME	TRAN	SDUCE	R					
LEAD ANA	ALYST	:	W. E	. PAR	KMAN	ī							
ASSESSMI	ENT:												
	-	ICAL LIGH W/FU	T	r A			Y SCR B	EENS	c c		CIL		
NASA IOA	[ 3	/3 /3	]	[ N	A] A]	[	NA] NA]	[	NA] NA]		[	] *	
COMPARE	[	/	1	[	]	[	]	ſ	1		[	]	
RECOMMEN	NDATI	ons:	(I	f dif	fere	ent f	rom N	ASA)	)				
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* CIL RI		ION	RATIC	NALE:	(If	app	licab		ADEQUA'		[	]	

ASSESSMEN ASSESSMEN NASA FMEA	T ID:	1/08/87 HYDWSB- 02-6-SY			nasa da Baseli N		: ]
SUBSYSTEM MDAC ID: ITEM:	I <b>:</b>	HYD/WSB 637 PRESSUR		DUCER			
LEAD ANAI	YST:	W. E. P.	ARKMAN				
ASSESSMEN	T:						
c	RITICAL:		REDUNI	DANCY SCRI	EENS	CII	
	HDW/FU		A	В	С		•••
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* CIL RET	ENTION 1	RATIONAL	E: (If	applicabl	le)		
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**REMARKS:** 

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SUBSYSTEM MDAC ID: ITEM:	M:		HYD/W 638 PRESS		TRAN	SDUC	ER						
LEAD ANA	LYST:	;	W. E.	PAI	RKMAN	Ī							
ASSESSME	NT:												
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	[	/	1 .	[	]	[	]	[	J	] Id <b>A</b> )	)/DE	] ELE	TE
* CIL RE	TENTI	ON 1	RATION	ALE:	: (If	app	licab		ADEQUAT IADEQUAT			]	
REMARKS:													

ASSESSME	ASSESSMENT DATE: 1/08/87 ASSESSMENT ID: HYDWSB-639 NASA FMEA #: 02-6-SYSTEM								NASA D BASEL	INE	[ [ X	]
SUBSYSTEMDAC ID:			HYD/ 639 PRES		E TRAN	spuc	ER					
LEAD AND	LYS	T:	W. E	. P#	ARKMAN	Ī						
ASSESSMI	ENT:											
		TICAL FLIGH IDW/FU	T		REDUN	DANC	CY SCR	EENS	; c		CII	=
WA CA		•		_		r	_	r			r	1 *
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* CIL RI	ETEN	TION	RATIO	NALI	E: (If	app	olicab		ADEQUA IADEQUA		[	]

**REMARKS:** 

ASSESSME	SSESSMENT DATE: 1/08/87 SSESSMENT ID: HYDWSB-643 ASA FMEA #: 02-6-C05-1 UBSYSTEM: HYD/WSB								ASA DA' BASELI N			]	
SUBSYSTEM MDAC ID:	M:		643		LICA	L RET	RACT	ACTU	ATOR	-			
LEAD ANA	LYST	:	W. E.	PAR	KMAN								
ASSESSME	NT:												
•	F	ICALI	r			DANCY	SCR				IL TEI		
	HDI	W/FUI	1C	A		В		С					
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* CIL RE	TENT	ION I	RATION	ALE:	(If	appl	icab	A	DEQUAT:	-		]	

REMARKS:

SUBSYSTEM: HYD/WSB MDAC ID: 644 ITEM: E.T. UMBILICAL RETRACT ACTUATOR  LEAD ANALYST: W. E. PARKMAN  ASSESSMENT:  CRITICALITY REDUNDANCY SCREENS CIL ITEM	
ASSESSMENT:  CRITICALITY REDUNDANCY SCREENS CIL	
CRITICALITY REDUNDANCY SCREENS CIL	
HDW/FUNC A B C	
NASA [2/1R] [P] [P] [X] IOA [2/1R] [P] [P] [X]	*
COMPARE [ / ] [ ] [ ] [ ]	
RECOMMENDATIONS: (If different from NASA)	
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* CIL RETENTION RATIONALE: (If applicable)  ADEQUATE [ X ]  INADEQUATE [ ]	

ASSESSMENT DATE: ASSESSMENT ID: NASA FMEA #:	•	NASA DATA BASELINI NEV											
	HYD/WSB 645 E.T. UMBILICAL	L RETRACT ACTUATOR											
LEAD ANALYST:	W. E. PARKMAN												
ASSESSMENT:													
CRITICALITY REDUNDANCY SCREENS CIL ITEM													
HDW/FUNC A B C													
NASA [ / IOA [ 3 /3	] [ NA]	[ ] [ ] [ NA] [ NA]	[ ] *										
COMPARE [ N /N	] [ N ]	[и] [и]	[ ]										
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* CIL RETENTION	RATIONALE: (If	applicable) ADEQUATE INADEQUATE	• •										
REMARKS:  IOA RECOMMENDS THAT A FMEA BE WRITTEN TO COVER AN INTERNAL  LEAKAGE FAILURE FOR AN E.T. UMBILICAL ACTUATOR.													

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ASSESSME	NT	:																	
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* CIL RE	TE	NT:	ION 1	RAT	ON	AL	E:	(If a	apj	pli	Lcab				JATE JATE		x	]	,
IOA CONC	UR:	5	WITH	NA	SA	AS	SES	SSMEN'	r 1	RA'I	MOI	ALE.							

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ASSESSME	NT	II	<b>)</b> :	HYDWSB-646A 02-6-C05-4										I	BAS	ELII NI	NE EW			]	
SUBSYSTE MDAC ID: ITEM:				64			BII	ICA	L I	RE	TR	ACI	r ACI	TU?	\TO	R					
LEAD ANA	LYS	T	:	W.	E.	P	ARI	MAN													
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	CRI		ICAL:				RI	DUN	DAI	NC	Y	SCF	REENS	5					IL TEN	4	
	H		/FUI		<u>.</u> .		A	÷ •			В			С	f . ;	1					
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REMARKS: IOA CONC	URS		HTIN	NA	SA A	se	SES	SME	NT	R	TAS	ION	IALE.								

ASSESSMENT DATE: ASSESSMENT ID: NASA FMEA #:	NASA DATA: BASELINE NEW	: [ ] [ x ]											
SUBSYSTEM: MDAC ID: ITEM:	HYD/WSB 647 EXTEND SOLENOID VALVE												
LEAD ANALYST:	W. E. PARKMAN												
ASSESSMENT:													
CRITICALITY REDUNDANCY SCREENS CIL ITEM													
FLIGH HDW/FU	ITEM												
NASA [ / IOA [ 3 /3	] [ ] ] [ NA]	[ ] [ [ NA ] [	NA]	[ ] *									
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RECOMMENDATIONS:	(If differen	t from NASA	)										
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* CIL RETENTION	RATIONALE: (If	-	ADEQUATE	[ ]									
REMARKS:		I	NADEQUATE	[ ]									
REMARKS: THIS FAILURE SHOULD BE COVERED BY THE RECOMMENDED FMEA COVERING INTERNAL LEAKAGE FAILURE OF AN E.T. UMBILICAL ACTUATOR. (REFERENCE MDAC ID #645)													

ASSESSMENT DATE: ASSESSMENT ID: NASA FMEA #:	1/08/87 HYDWSB-648		BASELINE NEW								
	HYD/WSB 648 EXTEND SOLE	TEND SOLENOID VALVE									
LEAD ANALYST:	W. E. PARKM	AN									
ASSESSMENT:											
CRITICAL FLIGH HDW/FU	T	UNDÂNCY SCREEI B	ns C	CIL ITEM							
NASA [ / IOA [ 3 /3	] [ ]]	[ NA]	[ ] [AN]	[ ] *							
COMPARE [ N /N	] [N]	[ N ]	[ א ]	[ ]							
RECOMMENDATIONS:	(If diffe	rent from NASA	A)								
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* CIL RETENTION	RATIONALE: (	<del>-</del> -	) ADEQUATE INADEQUATE								
REMARKS: IOA RECOMMENDS D EFFECT IN FLIGHT		FAILURE, SING	CE IT WOULD	HAVE NO							

ASSESSMENT DATE: ASSESSMENT ID: NASA FMEA #:	1/08/87 HYDWSB-6	549		NASA DATA BASELINE NEW	: [ x ]						
SUBSYSTEM: MDAC ID: ITEM:	HYD/WSB 649 EXTEND S	9 TEND SOLENOID VALVE									
LEAD ANALYST:	W. E. PA	ARKMAN			; - ; - ; - ; - ; - ; - ; - ; - ; - ; -						
ASSESSMENT:											
CRITICAL FLIGH		REDUNDA	NCY SCREE	INS	CIL ITEM						
HDW/FU		A	В	С							
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RECOMMENDATIONS:	(If di	ifferent	from NAS	SA)							
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* CIL RETENTION	RATIONALI	E: (If a	pplicable	ADEQUATE	[ ]						
REMARKS: DELETE THIS ASSE GROUND OPERATION		ORKSHEET	. THIS I	AILURE WOUL	•						

ASSESSMENT DATE: 1/08/87 ASSESSMENT ID: HYDWSB-650 NASA FMEA #:									NASA DATA: BASELINE [ ] NEW [ X ]								
SUBSYSTI MDAC ID: ITEM:				650	O/WSI O OW C		ROL	VA:	LV	Æ							
LEAD AN	ALY	ST	:	W.	E. :	PAR	KMA	N									
ASSESSMI	ENT	:															
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	1		W/FU			A				В		(	C		111	r.	
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ASSESSMENT DATE: ASSESSMENT ID: NASA FMEA #:		51	NASA DATA: BASELINE [ ] NEW [ X ]									
SUBSYSTEM: MDAC ID: ITEM:	HYD/WSB 651 FLOW CONT											
LEAD ANALYST:	W. E. PAR	RKMAN										
ASSESSMENT:												
CRITICALITY REDUNDANCY SCREENS CIL FLIGHT ITEM HDW/FUNC A B C												
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RECOMMENDATIONS:	(If dif	fferent i	from NASA	)								
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REMARKS: THIS FAILURE SHOULD BE COVERED BY THE RECOMMENDED FMEA COVERING INTERNAL LEAKAGE FAILURE OF AN E.T. UMBILICAL ACTUATOR. (REFERENCE MDAC ID #645)												

ASSESSMENT DATE: ASSESSMENT ID: NASA FMEA #:	1/08/87 HYDWSB-652		NASA DATA: BASELINE NEW	[	]								
SUBSYSTEM: MDAC ID: ITEM:	HYD/WSB 652 EXTEND SWITCHIN	2 TEND SWITCHING VALVE											
LEAD ANALYST:	W. E. PARKMAN												
ASSESSMENT:													
CRITICALITY REDUNDANCY SCREENS C FLIGHT I													
HDW/FU		В	С	11111									
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* CIL RETENTION I	RATIONALE: (If a		ADEQUATE NADEQUATE	[	]								
REMARKS: IOA RECOMMENDS DI EFFECT IN FLIGHT	EMARKS: OA RECOMMENDS DELETING THIS FAILURE, SINCE IT WOULD HAVE NO												

ASSESSMENT DATE: ASSESSMENT ID: NASA FMEA #:	1/08/87 HYDWSB-653		NASA DATA: BASELINE [ NEW [ X									
SUBSYSTEM: MDAC ID: ITEM:	HYD/WSB 653 EXTEND SWI											
LEAD ANALYST:	. •											
ASSESSMENT:												
CRITICALITY REDUNDANCY SCREENS CIL FLIGHT ITEM												
HDW/FU		A B C										
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* CIL RETENTION	RATIONALE:	(If applicable	e) ADEQUATE INADEQUATE	-								
REMARKS: THIS FAILURE SHO INTERNAL LEAKAGE												

ASSESSMENT DATE: 1/08/87 ASSESSMENT ID: HYDWSB-654 NASA FMEA #:										NASA DATA: BASELINE [ ] NEW [ X ]						
SUBSYSTE MDAC ID:				654	/WSB	FLO										
LEAD ANA	EAD ANALYST: W. E. PARKMAN															
ASSESSME	NT	:														
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	HYD/WSB 655 BYPASS FLOW VA	LVE			
LEAD ANALYST:	W. E. PARKMAN				
ASSESSMENT:					
CRITICAL	<del></del>	ANCY SCREEN	S	CIL	r
FLIGH HDW/FU		В	C	TIEM	
NASA [ / IOA [ 3 /3	] [ NA]	[ NA ] [	NA]	[	] *
COMPARE [ N /N	] [ N ]	[ N ] [	N ]	[	]
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ASSESSMI	SSESSMENT DATE: 1/08/8 SSESSMENT ID: HYDWSE ASA FMEA #:							i						BASELI N	NE		]	
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LEAD AND	ALY	ST	:	W.	E.	P	\RK	MAN										
ASSESSMI	ENT	:																
	CRITICALITY FLIGHT								NAC	CY	SCR	EENS	5			CIL		
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SUBSYSTE MDAC ID:	M:		HYD/W 657 RESET		LVE							
LEAD ANA	LYSI	?:	W. E.	PA	RKM	AN						
ASSESSME	NT:											
	F	CICAL LIGH	T	w · · · · · · · · · · · · · · · · · · ·	RED	UNDAN		SCRE	EN:	5 5	CII	
	HI	W/FU	NC		A		В			С		
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LEAD ANA	LY	sT	:	W.	E.	P	\RK	'IAM	Į										
ASSESSME	NT	:																	
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REMARKS: A "RESTR																	HOUI	ו סי	BE

ASSESSMENT DATE ASSESSMENT ID: NASA FMEA #:	: 1/08/8° HYDWSB			NASA DAT BASELIN NE	
SUBSYSTEM: MDAC ID: ITEM:	HYD/WS1 659 RETRAC		ID VALVE		
LEAD ANALYST:	W. E. 1	PARKMAN			
ASSESSMENT:					
CRITICA FLIG		REDUND	ANCY SCRE	EENS	CIL ITEM
HDW/F		A	В	С	IIEM
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* CIL RETENTION	RATIONA	LE: (If	applicabl		
			•	ADEQUATE INADEQUATE	•
REMARKS: A "RESTRICTED F CREATED FOR THE					

ASSESSME	ASSESSMENT DATE: 1/08/87 ASSESSMENT ID: HYDWSB-660 NASA FMEA #:														DATA: LINE NEW		]	
SUBSYSTE MDAC ID: ITEM:				660	/WSB RACT		OLEN	<b>IOI</b>	D '	VA]	LVE							
LEAD ANA	LY	ST	:	W.	E. P.	ARI	KMAN	ī										
ASSESSME	NT	:																
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RECOMMEN	DA'	TI	ons:	(	If d	ifi	fere	ent	f	roi	n NAS	SA)	)					
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LEAD ANALYST:	W. E. PA	RKMAN			
ASSESSMENT:					
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SUBSYSTEM: MDAC ID: ITEM:	HYD/WSB 664 RETRACT	SWITCHIN	IG VALVE										
LEAD ANALYST:	W. E. P	ARKMAN											
SSESSMENT: CRITICALITY REDUNDANCY SCREENS CIL													
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SUBSYSTE MDAC ID:	M:	HYD/WSB 665 RETRACT		ING VALVE		
LEAD ANA	LYST:	W. E. F	ARKMAN			
ASSESSME	NT:					
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ASSESSMENT DATE: ASSESSMENT ID: NASA FMEA #:	1/08/87 HYDWSB-66	57		NASA DATA BASELINE NEW	: [ x	]
SUBSYSTEM: MDAC ID: ITEM:	HYD/WSB 667 THERMAL R	RELIEF V	ALVE			-
LEAD ANALYST:	W. E. PAR	RKMAN				
ASSESSMENT:						
CRITICAL FLIGH HDW/FU	T		CY SCREE	ns C	CIL	1
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SUBSYSTEM: MDAC ID: ITEM:	HYD/WSB 668 SHAFT DRAIN SE	EAL			
LEAD ANALYST:	W. E. PARKMAN				
ASSESSMENT:					
CRITICALI FLIGHT HDW/FUN	<u>r</u>	B	ns C	CIL	1
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REMARKS: HARDWARE "3". TW DAMAGING	o c	٥F	THE	TH	REE								CA	L.	ACTU.	ATOR	SI				3 <i>A</i>

ASSESSMENT DATE: ASSESSMENT ID: NASA FMEA #:	1/08/87 HYDWSB-672 02-6-C10-1	NASA DAT BASELIN - NE	
SUBSYSTEM: MDAC ID: ITEM:	HYD/WSB 672 CHECK VALVE		
LEAD ANALYST:	W. E. PARKMAN	ſ	
ASSESSMENT:			
CRITICAL FLIGH		DANCY SCREENS	CIL ITEM
HDW/FU		в с	11111
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ASSESSMENT DATE: ASSESSMENT ID: NASA FMEA #:		I	ASA DATA: BASELINE [ ] NEW [ X ]
SUBSYSTEM: MDAC ID: ITEM:	HYD/WSB 673 CHECK VALVE		
LEAD ANALYST:	W. E. PARKMA	N	
ASSESSMENT:			
CRITICAI FLIGH HDW/FU	T	ndancy screens B C	CIL ITEM
NASA [ 2 /1F IOA [ 2 /1F	[ P ] [ P ]	[ P ] [ P [ P	] [ X ] * [ X ]
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SUBSYSTEM: HYD/WSB MDAC ID: 677 ITEM: MANUAL DRAIN VALVE  LEAD ANALYST: W. E. PARKMAN  ASSESSMENT:  CRITICALITY REDUNDANCY SCREENS CIL FLIGHT HDW/FUNC A B C  NASA [ 2 /1R ] [ P ] [ P ] [ P ] [ X ] * IOA [ 2 /1R ] [ P ] [ P ] [ P ] [ X ]  COMPARE [ / ] [ ] [ ] [ ] [ ]  RECOMMENDATIONS: (If different from NASA)  [ / ] [ ] [ ] [ ] [ ]  * CIL RETENTION RATIONALE: (If applicable)  ADEQUATE [ X ] INADEQUATE [ X ]	ASSESSME ASSESSME NASA FME	NT :	ID:	HYD	WSB.	-67	7 EM-2				NASA DAT BASELIN		[	x	]	
ASSESSMENT:  CRITICALITY REDUNDANCY SCREENS CIL ITEM HDW/FUNC A B C  NASA [ 2 /1R ] [ P ] [ P ] [ P ] [ X ] * IOA [ 2 /1R ] [ P ] [ P ] [ P ] [ X ]  COMPARE [ / ] [ ] [ ] [ ] [ ] [ ] [ ] [ ] [ ] [	MDAC ID:	M:		677			AIN '	VALVE	ļ							
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FLIGHT HDW/FUNC A B C  NASA [ 2 /1R ] [ P ] [ P ] [ P ] [ X ] * IOA [ 2 /1R ] [ P ] [ P ] [ P ] [ X ]  COMPARE [ / ] [ ] [ ] [ ] [ ]  RECOMMENDATIONS: (If different from NASA)  [ / ] [ ] [ ] [ ] [ ] [ ]  * CIL RETENTION RATIONALE: (If applicable)  ADEQUATE [ X ] INADEQUATE [ ]	ASSESSME	NT:														
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ASSESSMENT DAT ASSESSMENT ID: NASA FMEA #:	HYDWSB-678		NASA DATA BASELINE NEW		
SUBSYSTEM: MDAC ID: ITEM: ACCUMULATORS)	HYD/WSB 678 DRAIN (FROM	RESERVOIRS, MA	AIN PUMPS,	AND	
LEAD ANALYST:	W. E. PARKM	7N			
ASSESSMENT:		Anger on the control	- a - 1		
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ASSESSMENT DATE: ASSESSMENT ID: NASA FMEA #:	1/08/87 HYDWSB-6	79		NASA DATA BASELINE NEW	
SUBSYSTEM: MDAC ID: ITEM:	HYD/WSB 679 DRAIN (O	VERBOARD)			
LEAD ANALYST:	W. E. PA	RKMAN			
ASSESSMENT:					
CRITICAL FLIGH		REDUNDANCY	SCREEN	s	CIL ITEM
HDW/FU		A I	3	С	
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ASSESSME ASSESSME NASA FME	NT ID:	1/08/8 HYDWSE		3 - <b></b>	NASA DATA BASELINE NEV	
SUBSYSTE MDAC ID:	M:	HYD/WS 680 SHAFT	B SEAL DRA	IN HOSE		
LEAD ANA	LYST:	W. E.	PARKMAN			<u>.</u>
ASSESSME	NT:					
	CRITICAL FLIGH	T		ANCY SCRE		CIL ITEM
	HDW/FU	NC	A	В	С	
NASA IOA	[ 3 /3	] ]	[ ] [ NA]	[ NA]	[ ] [ NA]	[ ] *
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SUBSYSTE MDAC ID: ITEM:			HYD/W 681 SHAFT		AL DR	AIN I	HOSE						
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ASSESSMENT DATE: ASSESSMENT ID: NASA FMEA #:	1/08/87 HYDWSB-682	NASA DATA: BASELINE [ ] NEW [ X ]					
SUBSYSTEM: MDAC ID: ITEM:	HYD/WSB 682 SHAFT SEAL MANI	FOLD DRAIN					
LEAD ANALYST:	W. E. PARKMAN						
ASSESSMENT:							
CRITICAL FLIGH HDW/FU		NCY SCREENS B C	CIL				
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REMARKS: DELETE ASSESSMEN SIGNIFICANT EFFE		INADEQUAT					

ASSESSMENT DATE: 1/08/ASSESSMENT ID: HYDWS: NASA FMEA #: 02-6-				B-68					NASA D BASEL	INE		]
SUBSYSTE MDAC ID: ITEM:	M:		HYD/WS 683 SHAFT	•								
LEAD ANA	LYST	<b>?:</b>	W. E.	PAI	RKMAN				÷			
ASSESSME	NT:											
	CRITICALITY FLIGHT HDW/FUNC				REDUNDANCY SCREE A B				ens C			, M
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SUBSYSTE MDAC ID:	M:		HYD/W 684 OLEOF		BIC F	ILTEI	R (TY	PE I)					
LEAD ANA	LYST	:	W. E.	PA	ARKMA	N.				::	-	·	
ASSESSME													
,	ICAL LIGH W/FU	T					SCREENS C				CIL ITEM		
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ASSESSMENT DATE: ASSESSMENT ID: NASA FMEA #:	1/08/87 HYDWSB-685 02-6-E05-1	N	NASA DATA: BASELINE [ ] NEW [ X ]					
SUBSYSTEM: MDAC ID: ITEM:	HYD/WSB 685 SURFACE THERM	AL SWITCH						
LEAD ANALYST:	W. E. PARKMAN							
ASSESSMENT:								
CRITICAL: FLIGHT HDW/FUI	r	DANCY SCREENS B C	CIL ITEM					
NASA [ 3 /3 IOA [ 3 /3	] [ NA] ] [ NA]	[ NA] [ N [ NA] [ N	[A] [ ]	*				
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* CIL RETENTION D	RATIONALE: (If	A	DEQUATE [ ]					

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SUBSYSTE MDAC ID:	M:		HYD/V 686 SURF		THERM	IAL S	WITCH				. <del>.</del> .	
LEAD ANA	LYST	:	W. E.	. PA	RKMAN	Ī						2.5
ASSESSME	NT:											
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SUBSYSTE MDAC ID:	M:		HYD/V 687 LINE		TRIC	: неат	ERS		•			
LEAD ANA	LYSI	r:	W. E	. PAI	RKMAN	ī						
ASSESSME	NT:											
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FLIGH HDW/FU						В		C	!			
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SUBSYSTE MDAC ID:	M:		688		ECTR	IC HE	ATER	s						
LEAD ANA	LYST	:	w.	E. P	ARKM	AN								
ASSESSME	NT:													
	F	ICAL LIGH W/FU	r		RED A	UNDAN	CY S	CREEN	rs C			CI	L EM	
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ASSESSMENT DATE: ASSESSMENT ID: NASA FMEA #:			1/08/ HYDWS 02-6-	B-6		NASA DATA BASELINI NEW					[	x :	]	
SUBSYSTE MDAC ID:			HYD/W 689 OLEOP		IC FI	LTER	(TYP	E II	[)					
LEAD ANA	LYSI	r:	W. E.	PA	RKMAN	Ī								
ASSESSME	NT:													
		rical: Flight			REDUN	DANC	SCR	EENS	5		CI IT			
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REMARKS:											-	-		

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SUBSYSTE MDAC ID: ITEM:		HYD/WS 690 MANIFO		r seal dra	IN				
LEAD ANA	LYST:	W. E.	PARKMAN						
ASSESSME	NT:								
	CRITICAL FLIGH HDW/FU	T	REDUNI A	DANCY SCRE	ENS C	CIL ITEM			
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IOA	[ 3 /3	j	[ NA]	[ ] [ AN ]	[ NA]	[	j		
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ASSESSMENT DATE: ASSESSMENT ID: NASA FMEA #:	1/08/87 HYDWSB-691 02-6-E13-1	NASA DATA: BASELINE [ ] NEW [ X ]					
SUBSYSTEM: MDAC ID: ITEM:	HYD/WSB 691 MANIFOLD SHAFT	SEAL DRAIN					
LEAD ANALYST:	W. E. PARKMAN						
ASSESSMENT:							
CRITICAL: FLIGH' HDW/FU	T	ANCY SCREENS B C	CIL ITEM				
NASA [ 3 /3 IOA [ 3 /3		[ NA] [ NA] [ NA] [ NA]	[ ] *				
COMPARE [ /	] [ ]	[ ] [ ]	[ ]				
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ASSESSMENT DATE: ASSESSMENT ID: NASA FMEA #:	1/08/87 HYDWSB-692		NASA DATA BASELINE NEW	-
	HYD/WSB 692 OVERBOARD DRAI	n		
LEAD ANALYST:	W. E. PARKMAN			
ASSESSMENT:				
CRITICAL FLIGH HDW/FU		ANCY SCREE	ENS C	CIL ITEM
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* CIL RETENTION		applicable	e) ADEQUATE INADEQUATE	[ ]
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ASSESSME ASSESSME NASA FMI	ID:	1/08/87 HYDWSB-693 02-6-E13-1				NASA DATA: BASELINE [ ] NEW [ X ]						
SUBSYSTE MDAC ID:			HYD/WSB 693 OVERBOARD DRAIN									
LEAD ANA	LYS	T:	W. E.	PA	ARKMAN							
ASSESSME	ENT:	}										
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ASSESSMENT DATE ASSESSMENT ID: NASA FMEA #:	HYDWSB-694 02-6-E04-1	NASA DATA: BASELINE [ ] NEW [ X ]							
SUBSYSTEM: MDAC ID: ITEM:	HYD/WSB 694 OLEPHOBIC FILTE	ER (TYPE I)							
LEAD ANALYST:	W. E. PARKMAN								
ASSESSMENT:									
CRITICA FLIG HDW/F	HT	ANCY SCREENS B C	CIL ITEM						
NASA [ 3 /3 IOA [ 3 /3	] [ NA] ] [ NA]	[ NA] [ NA] [ NA]	[ ] *						
COMPARE [ /	] [ ]	[ ] [ ]	[ ]						
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SUBSYSTE MDAC ID:			HYD/ 695 SURI	WSB	THERM	MAL SI	WITCH	I						
LEAD ANA	LYS'	T:	W. I	E. PAI	RKMAN	ī								
ASSESSME	ENT:													
		TICAL FLIGH		I	REDUN	IDANC'	Y SCR	EENS	5		CIL			
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SUBSYSTE MDAC ID:	M:		696		THERM	IAL S	SWITCH	Ī				
LEAD ANA	LYS	ST:	W.	E. P.	ARKMAN	ī				٠.		
ASSESSME	NT:	•										
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SUBSYSTEM MDAC ID:	M:	•	HYD/Y 697 LINE		CTRIC	с неат	ER						
LEAD ANA	LYST	<b>':</b>	W. E	. PAF	RKMAN	1							
ASSESSME	NT:												
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SUBSYSTE MDAC ID:	M:		HYD 698 LIN	-		TRI	C H	ŒŹ	АТІ	ER							
LEAD ANA	LYSI	r:	w.	E.	PAI	RKMA	M										
ASSESSME	NT:																
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	HI	OW/FU	NC		2	7			В			С					
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ASSESSMENT DATE: ASSESSMENT ID: NASA FMEA #:	1/08/87 HYDWSB-699 02-6-SYSTEM-	-2	NASA DATA: BASELINE [ ] NEW [ X ]						
SUBSYSTEM: MDAC ID: ITEM:	HYD/WSB 699 CIRCULATION	PUMP CHECK VA	LVE						
LEAD ANALYST:	W. E. PARKMA	N							
ASSESSMENT:									
CRITICAL: FLIGHT HDW/FUI	r	INDANCY SCREEN B	s c	CIL ITEM					
NASA [ 2 /1R IOA [ 2 /1R	] [ P ]	[ P ] [	P ] P ]	[ X ] *					
COMPARE [ /	] [ ]	[ ] [	1	[ ]					
RECOMMENDATIONS:	(If differ	ent from NASA	)						
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ASSESSMENT DATE: ASSESSMENT ID: NASA FMEA #:	1/08/87 HYDWSB-700		NASA DATA: BASELINE [ ] NEW [ X ]								
SUBSYSTEM:	HYD/WSB 700 CIRCULATION	PUMP CHECK			T a						
LEAD ANALYST:	W. E. PARKMA	N									
ASSESSMENT:											
CRITICALI FLIGHT	ITY REDU	NDANCY SCRE	ENS	CIL							
HDW/FUN		В	С	112.							
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RECOMMENDATIONS:	(If differ	ent from NA	ASA)								
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REMARKS:			INADEQUATE	[	]						
DELETE ASSESSMENT THERMAL CONTROL I FAILURE IS HIGHLY	BY THE CIRCUL	. EFFECT ( ATION PUMP	F FAILURE IS FOR ONE SYST	LOS:	S OF THIS						

ASSESSMENT DATE: ASSESSMENT ID: NASA FMEA #:			NASA DATA BASELINE NEW						
	HYD/WSB 701 GSE CHECK VAL	DI SE CHECK VALVE							
LEAD ANALYST:	W.E. PARKMAN								
ASSESSMENT:									
CRITICAL: FLIGHT		DANCY SCRE	EENS	CIL ITEM					
HDW/FUI		В	<b>C</b>						
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* CIL RETENTION I	RATIONALE: (If	applicabl	le) ADEQUATE INADEQUATE						
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ASSESSME ASSESSME NASA FME	NT ID:	1/08/87 HYDWSB-		NASA DATA: BASELINE [ ] NEW [ X ]						
SUBSYSTE MDAC ID: ITEM:		HYD/WSB 702 GSE CHE		7E		<del>.</del>				
LEAD ANA	LYST:	W.E. PA	RKMAN							
ASSESSME	NT:									
	CRITICAL FLIGH			DANCY SCRE		CIL ITEM				
	HDW/FU	NC	A	В	C					
NASA IOA	[ / [ 3 /3	] [	NA]	[ ] [ NA]	[ ] [ NA]	[ ] *				
COMPARE	[ N /N	) [	и ]	[ N ]	[и]	[ ]				
RECOMMEN	DATIONS:	(If d	lifferer	nt from NA	SA)					
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					INADEQUATE					
REMARKS: DELETE T RECOGNIZ		URE ANAI E GROUND			S FAILURE WO					

ASSESSME ASSESSME NASA FME	ENT	I			8/87 WSB-703						NASA DATA: BASELINE [ ] NEW [ X ]						
SUBSYSTE MDAC ID:				HYD/W 703 GSE C		cĸ	VAI	VE									
LEAD ANA	LY	ST	:	W.E.	PAF	(KI	IAN										
ASSESSME	ENT	:															
	CR			ITY		RI	EDUN	DAN	CY	SCR	EENS	3			CIL		
	1		LIGH' W/FU			A			В			С			ITE	M	
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ASSESSMENT DATE: ASSESSMENT ID: NASA FMEA #:	1/08/87 HYDWSB-704 02-6-E10-2		NASA DATA: BASELINE [ ] NEW [ X ]						
SUBSYSTEM: MDAC ID: ITEM:	HYD/WSB 704 CIRCULATIO	ON PUMP CE	HECK VALVE						
LEAD ANALYST:	W. E. PARE	KMAN							
ASSESSMENT:									
CRITICAL: FLIGH HDW/FUI	r	EDUNDANCY B	SCREENS C		IL TEM				
NASA [ 2 /1R IOA [ 2 /1R		] [ P	] [ P	] [	X ] * X ]				
COMPARE [ /	] [	] [	] [	] [	]				
RECOMMENDATIONS:	(If diff	ferent fro	om NASA)						
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SUBSYSTEM MDAC ID:	M:	HYD/W 705 PRESS	SSURE TRANSDUCER										
LEAD ANAI	LYST:	W. E.	PAR	KMAN	ſ								
ASSESSMEN	NT:												
(	CRITICA FLIC HDW/1	SHT	R: A		IDANC'S	SCR	EENS	c C		CI	L		
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COMPARE	[ /	]	[	]	[	]	[	1		[	]		
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SUBSYSTE MDAC ID:			HYD/V 706 PRESS		TRAN	SDUC	ER								
LEAD ANA	LYS	r:	W. E.	. PAI	RKMAN	Ī			•						
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SUBSYSTEM MDAC ID: ITEM:	:	HYD/WSB 707 PRESSURE	E TRANS	DUCER			
LEAD ANAL	YST:	W. E. PA	ARKMAN	·			
ASSESSMEN	T:						
C	RITICALI FLIGHT HDW/FUI	r	REDUND.	ANCY SCRE	ens C	CIL ITEM	
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SUBSYSTEM: MDAC ID: ITEM:	HYD/WS 708 SUPPLY	SB Y FILTI	ER			
LEAD ANALYST:	W. E.	PARKM	AN			
ASSESSMENT:						
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SUBSYSTEM: MDAC ID: ITEM:	HYD/W: 710 PRESS	SB URE TRANS	SDUCER			
LEAD ANALYST:	W. E.	PARKMAN				
ASSESSMENT:						
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LEAD AND	LEAD ANALYST: W. E. PARKMAN																
ASSESSMI	ENT	:															
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REMARKS:

ASSESSMENT DATE: ASSESSMENT ID: NASA FMEA #:	1/08/87 HYDWSB-712 02-6-E11-A01	NASA DATA: BASELINE [ ] NEW [ X ]									
SUBSYSTEM: MDAC ID: ITEM:	HYD/WSB 712 PRESSURE TRANS	DUCER									
LEAD ANALYST:	W. E. PARKMAN	N. E. PARKMAN									
ASSESSMENT:											
CRITICAL FLIGHT HDW/FU	ľ	DANCY SCREENS	<b>c</b>	. CIL ITEM							
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ASSESSMENT DATE: ASSESSMENT ID: NASA FMEA #:	• •		
SUBSYSTEM: MDAC ID: ITEM:	HYD/WSB 714 RELIEF VALVE		
LEAD ANALYST:	W. E. PARKMAN		
ASSESSMENT:			
CRITICAL FLIGH HDW/FU	CIL ITEM		
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NASA [ / IOA [ 2 /1R	] [ ] [ : ] [ P ] [ I	] [ ] P ] [ P ]	[ x ] *
COMPARE [ N /N	] [N] [P	и] [и]	[ N ]
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	RATIONALE: (If appl	licable) ADEQUATE INADEQUATE	
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SUBSYSTEM: MDAC ID: ITEM:	HYD/W 715 RELIE	SB F VALVE				
LEAD ANALYST:	W. E.	PARKMAN	4			
ASSESSMENT:						
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LEAD ANA	LYS	r:	W. E.	PA	RKMAN								
ASSESSME	NT:												
		rical Fligh			DAN	CY SCR	EENS	5		CIL ITEM			
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SUBSYSTE MDAC ID:		HYD/WSB 718 PRESSUR		DUCER			
LEAD ANA	LYST:	W. E. P	ARKMAN				
ASSESSME	NT:						
	CRITICAL FLIGH HDW/FU	T	REDUND	ANCY SCRI	eens C	CIL	
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SUBSYSTI MDAC ID: ITEM:		720	/WSB E FILTER							
LEAD AND	ALYST:	<b>w.</b> :	E. PARKMAN	1						
ASSESSMI	ENT:									
	FL	CALITY IGHT /FUNC	REDUI	IDANCY SCR B	EENS C	CIL ITEM				
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SUBSYSTEM: MDAC ID: ITEM:		HYD/WS 721 RETURN		TER							-
LEAD ANALY	ST:	W. E.	PARI	NAM							
ASSESSMENT	:										
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ASSESSMENT DATE: ASSESSMENT ID: NASA FMEA #:	1/08/87 HYDWSB-723	NASA DATA: BASELINE [ ] NEW [ X ]
SUBSYSTEM: MDAC ID: ITEM:	HYD/WSB 723 FREON/OIL HEAT EXCHA	NGER
LEAD ANALYST:	W. E. PARKMAN	
ASSESSMENT:		
CRITICALI FLIGHT		CREENS CIL ITEM
HDW/FU		C
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REMARKS: THIS FAILURE SHOU	JLD BE IN THE ENVIRON	INADEQUATE [ ] MENTAL CONTROL SYSTEM FMEA

ASSESSMENT DATE: ASSESSMENT ID: NASA FMEA #:	1/08/87 HYDWSB-724	NASA DA BASELI	
SUBSYSTEM: MDAC ID: ITEM:	HYD/WSB 724 FREON/OIL HEAT	EXCHANGER	
LEAD ANALYST:	W. E. PARKMAN		
ASSESSMENT:			
CRITICAL FLIGH	T	ANCY SCREENS	CIL ITEM
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* CIL RETENTION	RATIONALE: (If a	applicable) ADEQUAT INADEQUAT	
REMARKS: IOA RECOMMENDS T	HAT A FMEA BE G	ENERATED TO RECOGNI	ZE THIS

ASSESSMENT DATE: ASSESSMENT ID: NASA FMEA #:	1/08/87 HYDWSB-725 02-6-SYSTEM-2	NASA DATA: BASELINE NEW	[ ]
SUBSYSTEM: MDAC ID: ITEM:	HYD/WSB 725 FREON/OIL HEAT	EXCHANGER	
LEAD ANALYST:	W. E. PARKMAN		
ASSESSMENT:			
CRITICAL: FLIGHT HDW/FUI	ľ	ANCY SCREENS B C	CIL ITEM
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* CIL RETENTION :	RATIONALE: (If	applicable) ADEQUATE INADEQUATE	[ X ]

ASSESSMENT DATE: ASSESSMENT ID: NASA FMEA #:	1/08/87 HYDWSB-726								
SUBSYSTEM: MDAC ID: ITEM:	HYD/WSB 726 FREON/OIL HEAT	EXCHANGER							
LEAD ANALYST:	W. E. PARKMAN								
ASSESSMENT:									
CRITICAL FLIGH	T	ANCY SCREENS	CIL ITEM						
HDW/FU	NC A	ВС							
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ASSESSMENT DATE: ASSESSMENT ID: NASA FMEA #:	HYDWSB-727		DATA: LINE [ ] NEW [ X ]
SUBSYSTEM: MDAC ID: ITEM:	HYD/WSB 727 FREON/OIL HEA	AT EXCHANGER	
LEAD ANALYST:	W. E. PARKMAN	ī	
ASSESSMENT:			
CRITICA FLIGH HDW/FU	łΤ	DANCY SCREENS  B C	CIL ITEM
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SUBSYSTE MDAC ID:			728	YD/WSB 28 HERMAL CONTROL VALVE									
LEAD ANA	LYS	T:	W. E	. PA	RKMAN	T							
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LEAD ANA	LYST:	W. E	. PAR	KMAN	ī						
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ASSESSME	NT:														
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SUBSYSTEM MDAC ID:	M:		HYD/ 731 THEF		CONT	ROL 1	VALVE		·				
LEAD ANA	LYST:		W. F	. P	arkmai	1	. = - : .						
ASSESSME	NT:												
(		JIGHT			REDUI	NADIO	CY SCE B	REENS	c ·		IL TEN		
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LEAD ANA	LYST	:	<b>W.</b> 1	E. F	AR	KMAI	Ŋ	72										
ASSESSME	NT:																	
		ICAL LIGH		<del></del>	R	EDUI	MDAN	C	Y	SCR	EENS					L CEM	1	
	HD	W/FU	NC		A			]	В			С						
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	<b>C</b> .	/1R	]	(	P	]	[		P	]	[	P	]	(Al		/DE		ETE)
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ASSESSMENT DATE: ASSESSMENT ID: NASA FMEA #:	1/08/87 HYDWSB-80 05-6G-20			NASA DATA: BASELINE [ ] NEW [ X ]							
SUBSYSTEM: MDAC ID: ITEM:	HYD/WSB 801 RESISTOR	(SWITC	CH 28)								
LEAD ANALYST:	W. E. PAI	RKMAN									
ASSESSMENT:											
CRITICAL FLIGH HDW/FU	T	REDUNDA A	NCY SCRE	ENS C	CIL						
NASA [ 3 /3 IOA [ 3 /3	] [ 1	NA] NA]	[ NA] [ NA]	[ NA] [ NA]	[	] * ]					
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REMARKS:				-	-	-					

ASSESSMENT DATE: ASSESSMENT ID: NASA FMEA #:	1/08/87 HYDWSB-802 05-6G-201200-1	NASA DATA BASELINE NEW	
SUBSYSTEM: MDAC ID: ITEM:	HYD/WSB 802 SWITCH 28		
LEAD ANALYST:	W. E. PARKMAN		÷ .
ASSESSMENT:			
CRITICAL FLIGH HDW/FU	${f T}$	SCREENS C	CIL ITEM
NASA [ 3 /3 IOA [ 3 /1R	] [NA] [NA :] [P] [P	] [ NA] ] [ P ]	[ ] *
COMPARE [ /N	] [N] [N	] [N]	[ ]
RECOMMENDATIONS:	(If different fro	m NASA)	
[ /1R	[ P ] [ P		[ ] DD/DELETE)
* CIL RETENTION	RATIONALE: (If appli		
		ADEQUATE INADEQUATE	
	IS BASED ON POSSIBI		EEZING

ASSESSMENT DA ASSESSMENT ID NASA FMEA #:	•	B-803		NASA DATA BASELINI NEV		]
SUBSYSTEM: MDAC ID: ITEM:	HYD/W 803 REMOT		CONTROLLE	R NO. 37		
LEAD ANALYST:	W. E.	PARKMAN				
ASSESSMENT:						
	CALITY	REDUNI	DANCY SCRI	EENS	CIL	
	IGHT /FUNC	A	В	С	ITE	.M
NASA [ 3	/3 ] /1R ]	[ NA] [ P ]	[ NA] [ P ]	[ NA] [ P ]	[	] * ]
COMPARE [	/N ]	[ N ]	[ N ]	[ N ]	[	]
RECOMMENDATIO	ons: (If	differer	nt from NA	ASA)		
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ASSESSMENT DATE: ASSESSMENT ID: NASA FMEA #:	• •	NASA DATA: BASELINE [ ] NEW [ X ]
SUBSYSTEM: MDAC ID: ITEM:	HYD/WSB 804 REMOTE POWER CONTROLLER	NO. 37
LEAD ANALYST:	W. E. PARKMAN	
ASSESSMENT:		
CRITICAL: FLIGHT HDW/FUI	r	ENS CIL ITEM C
NASA [ 3 /3 IOA [ 3 /3	] [ NA] [ NA] ] [ NA] [ NA]	[ NA] [ ] * [ NA] [ ]
COMPARE [ /	] [ ] [ ]	[ ] [ ]
RECOMMENDATIONS:	(If different from NA	SA)
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* CIL RETENTION I	RATIONALE: (If applicabl	e) ADEQUATE [ ] INADEQUATE [ ]

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SUBSYSTE MDAC ID: ITEM:			HYD/ 805 RESI			(SWI	TCI	<b>I</b> :	19	)			•					
LEAD ANA	LYST	:	W. E	. F	AR	KMAN	ſ											
ASSESSME	NT:																	
	F	ICAL: LIGH! W/FUI	_		RI A		DAI		Y B	SCRE	ENS	s c			C]	L	1	
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COMPARE	[	/N	]	[	N	]	1	]	N	]	[	N	]		[		)	
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SUBSYSTE MDAC ID: ITEM:	M:		HYD/W8 806 RESIS									
LEAD ANA	LYSI	?:	W. E.	PA	RKMAN							
ASSESSME	NT:											
		ICAL LIGH			REDUN	DANG	CY SCR	EENS	5		CIL	
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SUBSYSTEM: MDAC ID: ITEM:		HYD/W 807 SWITC													
LEAD ANALYST	:	W. E.	P.	ARI	KMAN										
ASSESSMENT:															
	ICAL:	ITY F		RI	EDUN	DANG	CY	SCRE	EN:	5			CIL		
		NC		A			В			С					
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SUBSYSTEM: MDAC ID: ITEM:	HYD/W 808 SWITC			-	
LEAD ANALYST	W. E.	PARKMAN			
ASSESSMENT:					
F	CALITY LIGHT N/FUNC	REDUND A	ANCY SCRE B	ENS C	CIL ITEM
NASA [ 3 IOA [ 3	/3 ] /3 ]	[ NA] [ NA]	[ NA] [ NA]	[ NA] [ NA]	. [ ] *
COMPARE [	/ ]	[ ]	[ ]	[ ].	<b>נ</b> '' ''
RECOMMENDATIO	ons: (If	differen	t from NA	SA)	n Magnus Titul
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* CIL RETENT	ON RATION	ALE: (If	applicabl	e) ADEQUATE INADEQUATE	• •
REMARKS:					

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SUBSYSTE MDAC ID: ITEM:			HYD/W 809 REMOT		<b>?O</b> V	VER (	COI	ΓN	RC	LLER	N	) ).	40			-	
LEAD ANA	LYST	:	W. E.	P	ARI	MAN					-						
ASSESSME	NT:																
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		LIGH' W/FU	NC L		A				В			С		÷	IIE.	M	
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COMPARE	[	/N	1	[	N	]	İ	[	N	]	[	N	]		[	]	
RECOMMEN	DATI	ons:	(If	đ:	if	fere	nt	f	rc	m NA	SA	)					
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ASSESSMENT DAT ASSESSMENT ID: NASA FMEA #:	E: 1/08/87 HYDWSB-810 05-6G-201100-	BA	A DATA: SELINE [ ] NEW [ X ]
SUBSYSTEM: MDAC ID: ITEM:	HYD/WSB 810 REMOTE POWER	CONTROLLER NO. 4	.0
LEAD ANALYST:	W. E. PARKMAN		
ASSESSMENT:			
CRITIC FLI HDW/	SHT	DANCY SCREENS B C	CIL ITEM
·		[ NA] [ NA] [ NA] [ NA]	[ ] *
COMPARE [ /	<b>1</b> . [ 1]	[ ]	[ ]
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* CIL RETENTIO	N RATIONALE: (If	ADE	QUATE [ ]

	1/08/87 HYDWSB-8 05-6G-20			NASA DATA: BASELINE NEW					
SUBSYSTEM: MDAC ID: ITEM:	HYD/WSB 811 FUSE 51,	52, 53							
LEAD ANALYST:	W. E. PA	RKMAN		1 ) AM+					
ASSESSMENT:									
CRITICAL FLIGH		REDUNDA	NCY SCREE		CIL ITEM				
HDW/FU	NC	<b>A</b>	В	<b>C</b>					
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RECOMMENDATIONS:	(If di	fferent	from NAS	SA)					
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LEAD ANALYST: W. E. PARKMAN																			
ASSESSMENT:																			
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	1	HDI	/FU	NC			Α			В			C						
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SUBSYSTE MDAC ID: ITEM:				81			ra 1	r (s	16	,	sı	.7, S	4)							
LEAD ANA	LY	ST	:	W.	E.	P	ARI	MAN				Tibe			-		-			* ** .5
ASSESSME	NT	:																		
	CR:		ICAL:				Ŕŀ	EDUN	DAI	1C	Y	SCRE	ENS	3				CII		
	]	_	LIGH' W/FU				A				В			С				111	2141	
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COMPARE	[	N	/N	]		[	N	]			N	]	[	N	]			[	]	
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REMARKS: DELETE M HARDWARE				813	. I	H	cs	ITE	M V	٧A	s	COVE	REI	) :	EN !	THE	Н	EATI	ER.	

ASSESSMENT DATE: ASSESSMENT ID: NASA FMEA #:				NASA DATA BASELINE NEW		]
SUBSYSTEM: MDAC ID: ITEM:	HYD/WSB 814 MASTER EV	VENTS CONT	ROLLER	- 		
LEAD ANALYST:	W. E. PAR	RKMAN				
ASSESSMENT:						
CRITICAL FLIGH		REDUNDANCY	SCREENS		CIL	1
HDW/FU		. В	ı	C		
NASA [ 2 /1R IOA [ 3 /1R	[ P	? ] [ F	] [	P ] P ]	[ X	] * ]
COMPARE [ N /	] [	] [	] [	3	[	]
RECOMMENDATIONS:	(If dif	ferent fr	om NASA)			
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* CIL RETENTION REMARKS:	RATIONALE:	(If appl		ADEQUATE ADEQUATE	[ X	]
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ASSESSMENT DATE: ASSESSMENT ID: NASA FMEA #:	1/08/87 HYDWSB-815 05-6G-201000-2	2	NASA DATA BASELINE NEW	[	]
SUBSYSTEM: MDAC ID: ITEM:	HYD/WSB 815 MASTER EVENTS	CONTROLLER			
LEAD ANALYST:	W. E. PARKMAN				
ASSESSMENT:					
CRITICAL FLIGH HDW/FU	T	DANCY SCREEN B	s c	CIL	4
NASA [ 3 /3 IOA [ 3 /3	] [ NA] ] [ NA]	[ NA] [ [ NA] [	NA] NA]	[	] * ]
COMPARE [ /	] [ ]	[ ] [	]	[	]
RECOMMENDATIONS:	(If differen	nt from NASA	)		
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* CIL RETENTION REMARKS:	RATIONALE: (If		ADEQUATE NADEQUATE	[	]

ASSESSMENT DATE: ASSESSMENT ID: NASA FMEA #:	1/08/87 HYDWSB-816 05-6G-200400-	BAS	DATA: ELINE [ ] NEW [ X ]
SUBSYSTEM: MDAC ID: ITEM:	HYD/WSB 816 POWER CONTACT	TOR (K3, K4)	<u> </u>
LEAD ANALYST:	W. E. PARKMAN	N	
ASSESSMENT:			
CRITICAL FLIGH		NDANCY SCREENS	CIL ITEM
HDW/FU		ВС	<del>#</del> -
NASA [ 3 /1R IOA [ 3 /1R		[ P ] [ P ] [ P ] [ P ]	[ ] *
COMPARE [ /	] [ ]	[ ] [ ]	[ ]
RECOMMENDATIONS:	(If differe	ent from NASA)	
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* CIL RETENTION	RATIONALE: (I1	f applicable) ADEQ INADEQ	
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ASSESSMENT DATE: ASSESSMENT ID: NASA FMEA #:	1/08/87 HYDWSB-8 05-6G-21	317 L14-2		NASA DATA: BASELINE NEW		
SUBSYSTEM:	HYD/WSB 817	ONTACTOR				-
LEAD ANALYST:	W. E. P	ARKMAN		*		
ASSESSMENT:						
CRITICALI FLIGHT		REDUNDANG	CY SCREENS	5	CIL ITEM	Ī
HDW/FU		A	В	С		
NASA [ 3 /1R IOA [ 3 /3	] [	F ] [ NA] [	F ] [ NA] [	P ] NA]	x ]	] * ]
COMPARE [ /N	] [	и][	N ] [	N ]	[ N	]
RECOMMENDATIONS:	(If d	ifferent i	from NASA	)		
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ASSESSMENT DATE: ASSESSMENT ID: NASA FMEA #:	HYDWSB-818		BASELINI NE	
	HYD/WSB 818 HYBRID DRIV	VER (K3), AR	TYPE III	
LEAD ANALYST:	W. E. PARK	IAN	•	
ASSESSMENT:				
CRITICAL FLIGH HDW/FU	r	DUNDANCY SCRE	ENS C	CIL ITEM
NASA [ 3 /1R IOA [ 3 /3	] [ P ]	[ F ] [ NA]	[ P ] [ NA]	[ X ] *
COMPARE [ /N	] [ N ]	[ א ]	[ N ]	[ N ]
RECOMMENDATIONS:	(If diffe	erent from NA	SA)	
[ /3	] [ NA]	[ NA]		[ D ] ADD/DELETE)
* CIL RETENTION	RATIONALE:	(If applicabl	e) ADEQUATE INADEQUATE	•
REMARKS: THE FUNCTION OF LOSS OF ALL REDU APU START OR DUR NOT RESULT IN LO IN LOSS OF MISSI	NDANCY MEANS ING APU OPEI SS OF LIFE (	S POSSIBLE LO RATION. LOSS OR VEHICLE NO	SS OF ONE C OF ONE CIR R WILL IT R	IRC PUMP AT C. PUMP WILI ESULT

ASSESSMENT DATE: ASSESSMENT ID: NASA FMEA #:			ASA DATA: BASELINE [ ] NEW [ X ]				
SUBSYSTEM: MDAC ID: ITEM:	HYD/WSB 819 HYBRID DRIVE						
LEAD ANALYST:	W. E. PARKMAI						
ASSESSMENT:							
CRITICAL: FLIGHT	<del></del>	NDANCY SCREENS	CIL ITEM				
HDW/FU		в с					
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COMPARE [ /	] [ ]	[ ] [	] [ ]				
RECOMMENDATIONS:	(If differe	ent from NASA)	•				
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* CIL RETENTION 1	RATIONALE: (I	A	DEQUATE [ ] DEQUATE [ ]				
LOSS OF ALL REDU	NDANCY MEANS : PÜMP WILL NO LT IN LOSS OF	TO PROVIDE POWER TO TRESULT IN LOS	R TO ONE CIRC PUMP. O ONE CIRC PUMP. SS OF LIFE OR VEHICLE				

ASSESSMENT DATE: ASSESSMENT ID: NASA FMEA #:	1/08/87 HYDWSB-820 05-6G-200400-1	NASA DATA: BASELINE [ ] LL1 NEW [ X ]							
SUBSYSTEM: MDAC ID: ITEM:	820 <sup>°</sup>	•							
LEAD ANALYST:	W. E. PARKMAN								
ASSESSMENT:									
CRITICAL FLIGH	ITY REDUNI	DANCY SCREENS	CIL ITEM						
HDW/FU		В С							
NASA [ 3 /1R IOA [ 3 /1R	] [ P ] ] [ P ]	[ P ] [ P ] [ P ] [ P ]	[ ] *						
COMPARE [ /	] [ ]	[ ] [ ]	[ ]						
RECOMMENDATIONS:	(If differe	nt from NASA)							
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* CIL RETENTION	RATIONALE: (If	applicable)	מאייב ו						
DEMI DVG			UATE [ ]						
REMARKS: THE FUNCTION OF THIS ITEM IS TO PROVIDE POWER TO ONE CIRC PUMP. LOSS OF ALL REDUNDANCY MEANS LOSS OF POWER TO ONE CIRC PUMP. LOSS OF ONE CIRC. PUMP WILL NOT RESULT IN LOSS OF LIFE OR VEHICLE NOR WILL IT RESULT IN LOSS OF MISSION. LOSS OF A CIRC. PUMP IS CRITICALITY 3/1R.									

ASSESSMENT DATE: ASSESSMENT ID: NASA FMEA #:	HYDWSB-821		BASELINE NEW	
SUBSYSTEM: MDAC ID: ITEM:	HYD/WSB 821 HYBRID DRIVE	ER (K4), AR TY	PE III	
LEAD ANALYST:	W. E. PARKMA	AN .		
ASSESSMENT:				
CRITICAL: FLIGHT		INDANCY SCREEN	ıs	CIL ITEM
HDW/FUI		В	С	
NASA [ 3 /1R IOA [ 3 /3	] [ P ] ] [ NA]	[ F ] [ [ NA] [	P] NA]	[ X ] * [ ]
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* CIL RETENTION	RATIONALE: ()	[f applicable]		_
		3	ADEQUATE NADEQUATE	[ ]
REMARKS: THE FUNCTION OF 'LOSS OF ALL REDU' APU START OR DUR NOT RESULT IN LO	NDANCY MEANS ING APU OPERA SS OF LIFE OF	POSSIBLE LOSS ATION. LOSS O VEHICLE NOR	S OF ONE CIRC OF ONE CIRC WILL IT RES	RC PUMP AT . PUMP WILL SULT
IN LOSS OF MISSI	ON. LOSS OF	A CIRC. PUMP	IS CRITICAL	PIIX 3/IK.

ASSESSMENT DATE: ASSESSMENT ID: NASA FMEA #:	HYDWSB-822	M2	NASA DATA BASELINE NEW	
	HYD/WSB 822 HYBRID DRIVER	(K4), AR TY	PE II	
LEAD ANALYST:	W. E. PARKMAN			
ASSESSMENT:				
CRITICAL FLIGH HDW/FU	${f T}$	ANCY SCREEN B	s C	CIL ITEM
NASA [ 3 /1R IOA [ 3 /1R	[ P ] [ P ]	[ P ] [ [ P ] [	P ] P ]	[ ] *
COMPARE [ /	] [ ]	[ ] [	]	[ ]
RECOMMENDATIONS:	·			
[ 3 /3	] [ NA]	[ NA] [	NA]	[ ] DD/DELETE)
* CIL RETENTION	RATIONALE: (If	• •	ADEQUATE NADEQUATE	[ ]
REMARKS: THE FUNCTION OF DURING APU OPERA REDUNDANT POWER	TION. INADVERT	ENT OPERATI		

ASSESSMENT DATE: ASSESSMENT ID: NASA FMEA #:	1/08/87 HYDWSB-823 05-6G-200400-1	M1	NASA DATA: BASELINE NEW		
SUBSYSTEM: MDAC ID: ITEM:	HYD/WSB 823 HYBRID DRIVER	(K4), AR TY	PE II		
LEAD ANALYST:	W. E. PARKMAN				
ASSESSMENT:					
	TTY REDUND	ANCY SCREEN	S	CIL ITEM	
FLIGHT HDW/FUI		В	С	1150	
NASA [ 3 /3 IOA [ 3 /3	] [ P ] ] [ NA]	[ P ] [ NA ] [	P ] NA]	[ ] *	
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RECOMMENDATIONS:	(If differen	t from NASA	.)		
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* CIL RETENTION 1	RATIONALE: (If		ADEQUATE	[ ]	
REMARKS: SCREENS SHOULD B	E NAs PER NSTS	22206 DOCUM	ENT.		

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SUBSYSTEM MDAC ID:	<b>1</b> :	HYD/WSB 824 RESISTO		RENT LIMII	PER - 1.2K	
LEAD ANAI	LYST:	J. DUVA	L			
ASSESSMEN	NT:					
C	CRITICAL FLIGH		REDUN	DANCY SCRE	ENS	CIL ITEM
	HDW/FU	NC	A	В	С	
NASA IOA	[ / [ 3 /3	] [	NA]	[ ] [ NA]	[ ] [ NA] .	[ ] *
COMPARE	[ N /N	] [	N ]	[ N ]	[и]	[ ]
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	TENTION	RATIONAL	E: (If	applicabl	e) ADEQUATE INADEQUATE	
REMARKS:	FMEA. N	OT CONSI	DERED	A CREDIBLE	FAILURE.	

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SUBSYSTE MDAC ID:				82			R, CUI	RREN	T I	LIM	IITER	-	1.2K				
LEAD ANA	LY	ST	:	J.	DUV	A)	Շ										٠
ASSESSME	NT	:															
		F	ICAL LIGH	$\mathbf{T}$	•		REDUI	NADN	CY B	sc	REENS	s c			CII		
		ועח	W/FU	INC			A		Б			C					
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**REMARKS:** 

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SUBSYSTE MDAC ID:			HYD/ 826 BLOC		G DIOD	)E -	3 <b>A</b>				=	
LEAD ANA	LYST	:	J. [	IAVU	<u>.</u>							
ASSESSME	NT:											
		ICAI LIGH W/FU	$\mathbf{T}$		REDUN A	IDANC	CY SCR B	EENS	c c	CI		
NASA IOA		·			NA] NA]		NA] NA]		NA] NA]	[	]	*
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ASSESSMENT DATE: ASSESSMENT ID: NASA FMEA #:	1/08/87 HYDWSB-827 05-6G-200400-3	ıĸ	NASA DATA BASELINE NEW	: [ [ x	]
SUBSYSTEM: MDAC ID: ITEM:	HYD/WSB 827 BLOCKING DIODI	E - 3A			
LEAD ANALYST:	J. DUVAL				
ASSESSMENT:					
CRITICAL: FLIGHT HDW/FU	r	DANCY SCREEN	s c	CIL ITEM	1
NASA [ 3 /3 IOA [ 3 /3		[ NA] [ [ NA] [	NA] NA]	[	] *
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* CIL RETENTION I	RATIONALE: (If		ADEQUATE NADEQUATE	[	]

SUBSYSTEM: HYD/WSB MDAC ID: 828 ITEM: RESISTOR CURRENT LIMITER - 5.1K  LEAD ANALYST: J. DUVAL  ASSESSMENT:  CRITICALITY REDUNDANCY SCREENS CIL FLIGHT ITEM HDW/FUNC A B C  NASA [ 3 /3 ] [ ] [ ] [ ] [ ] * IOA [ 3 /3 ] [ NA] [ NA] [ NA] [ ]  COMPARE [ / ] [ N ] [ N ] [ N ] [ ]  RECOMMENDATIONS: (If different from NASA)  [ / ] [ NA] [ NA] [ NA] [ NA] [ ]  * CIL RETENTION RATIONALE: (If applicable)  * CIL RETENTION RATIONALE: (If applicable)  * PERMARKS:	ASSESSME ASSESSME NASA FME	ידימי	TI	n •	HV	ופשחי	R-	828 004	3 100-	-1Q	-					NASA D BASEL		[	x	]	
ASSESSMENT:    CRITICALITY   REDUNDANCY SCREENS   CIL   ITEM	MDAC ID:				82	8.			CURF	RENT	r	LI	MI	rer		5.1K			•		
CRITICALITY REDUNDANCY SCREENS CIL ITEM HDW/FUNC A B C  NASA [ 3 /3 ] [ ] [ ] [ ] [ ] * IOA [ 3 /3 ] [ NA] [ NA] [ NA] [ ] * COMPARE [ / ] [ N ] [ N ] [ N ] [ ] [ ] *  RECOMMENDATIONS: (If different from NASA)  [ / ] [ NA] [ NA] [ NA] [ NA] [ ] (ADD/DELETE  * CIL RETENTION RATIONALE: (If applicable)  ADEQUATE [ ] INADEQUATE [ ]	LEAD ANA	LY	ST	:	J.	יטם	VA:	L				•									
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SUBSYSTEM MDAC ID:	M:	829		CURRENT	LIMITER	- 5.1K		
LEAD ANA	LYST:	J.	DUVAL				· .	
ASSESSME	NT:							
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	HDW,	/FUNC	A	1	В	С		
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ASSESSMI	ENT	:												
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SUBSYSTEMDAC ID:				83			MIT	'ER	RE	SI	STOR	.S	2.15K				
LEAD ANA	LYS	ST	:	J.	DUVA	L											
ASSESSMI	ENT	:															
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**REMARKS:** 

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SUBSYSTE MDAC ID: ITEM:	M:		HYD/ 833 CURR	WSB RENT L	IMIT	ER RE	SIST	ORS 2	.15K			
LEAD ANA	LYSI	r:	J. D	UVAL								
ASSESSME	NT:											
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			NC	A		E	3	C	:			
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REMARKS:	HOU	LD BE	BLAN	IK PER	NST	'S-222	206.					

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SUBSYSTEMDAC ID:	M:	HYD/ 834 BLOC	WSB KING DIOI	DE - 3A			
LEAD ANA	LYST:	J. D	UVAL				
ASSESSME	NT:						
	CRITICA FLIC		REDUI	NDANCY SCE	REENS.	CII ITE	
	HDW/I	UNC	A	В	С		
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REMARKS:						[	J

ASSESSMENT DATE: ASSESSMENT ID: NASA FMEA #:	1/08/87 HYDWSB-835 05-6G-2004		NASA DAT BASELIN NE	
SUBSYSTEM: MDAC ID: ITEM:	HYD/WSB 835 BLOCKING D	DIODE - 3A		
LEAD ANALYST:	J. DUVAL			
ASSESSMENT:		·		
CRITICAL FLIGH		EDUNDANCY S	SCREENS	CIL ITEM
HDW/FU	NC A	В	С	
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REMARKS: THE FUNCTION OF LOSS OF ALL REDULATION OF ONE CIRC NOR WILL IT RESULATION FOR THE PUMP IS CRITICAL	NDANCY MEAN . PUMP WILL LT IN LOSS	IS LOSS OF NOT RESUI	POWER TO ONE CLT IN LOSS OF L	IRC. PUMP. IFE OR VEHICLE
TOWN TO CHILLOUN	/			

ASSESSMENT DATE: ASSESSMENT ID: NASA FMEA #:	1/08/87 HYDWSB-836 05-6G-200400-1	J	NASA DATA BASELINE NEW	: [		
SUBSYSTEM: MDAC ID: ITEM:	HYD/WSB 836 BLOCKING DIODE	: - MDM CIRC	UIT 3A			
LEAD ANALYST:	J. DUVAL					
ASSESSMENT:						
CRITICALI FLIGHT HDW/FUN	ŗ	ANCY SCREEN	s c	CIL ITEM		
NASA [ 3 /3 IOA [ 3 /3	] [ NA] ] [ NA]	[ NA] [ [ NA] [	NA] NA]	[ ] *		
COMPARE [ /	] [ ]	[ ] [	]	[ ]		
RECOMMENDATIONS: (If different from NASA)						
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* CIL RETENTION F	RATIONALE: (If		ADEQUATE NADEQUATE	[ ]		

NASA DATA:

ASSESSMENT DATE: ASSESSMENT ID: NASA FMEA #:	HYDWSB-837		ASA DATA: BASELINE [ ] NEW [ X ]			
	HYD/WSB 837 BLOCKING DIODE	E - MDM CIRCUI	г за			
LEAD ANALYST:	J. DUVAL					
ASSESSMENT:						
CRITICAL: FLIGHT	ITY REDUNI	DANCY SCREENS	CIL ITEM			
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* CIL RETENTION RATIONALE: (If applicable)  ADEQUATE [ ]  INADEQUATE [ ]						
TO ONE CIRC PUMP	. LOSS OF ALL LOSS OF ONE C LE NOR WILL IT	REDUNDANCY ME IRC. PUMP WILL RESULT IN LOS	PC TO PROVIDE POWER ANS LOSS OF POWER TO NOT RESULT IN LOSS S OF MISSION.			

ASSESSMEI NASA FME	NT ID:	1/08/87 HYDWSB-8 05-6G-20		11-1	BASELIN NE		x ]
SUBSYSTEM MDAC ID:	M:	HYD/WSB 838 BLOCKING	G DIOD	es sw "on	" CIRCUIT (3	3 <b>A</b> )	
LEAD ANA	LYST:	J. DUVAI	Ľ				
ASSESSME	NT:						
(	CRITICAL FLIGH HDW/FU	T	REDUNI A	DANCY SCR	EENS C	CI	
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SUBSYSTEM: MDAC ID: ITEM:	HYD/WSB 839 BLOCKING I	DIODES SW	"ON" CIRC	UIT (3A)		
LEAD ANALYST:	J. DUVAL					
ASSESSMENT:						
	ITY RI	EDUNDANCY	SCREENS		IL TEM	
FLIGHT HDW/FUI		В	С		. 1 1311	
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COMPARE [ /	] [	) [	] [	] [	]	
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ASSESSMENT DATE: ASSESSMENT ID: NASA FMEA #:	HYDWSB-840					
SUBSYSTEM: MDAC ID: ITEM:	HYD/WSB 840 CURRENT LIMIT	TER RESISTOR, 1.21K				
LEAD ANALYST:	J. DUVAL					
ASSESSMENT:						
		IDANCY SCREENS	CIL ITEM			
FLIGH HDW/FU		в с	TIEM			
NASA [ 3 /1R IOA [ 3 /1R	] [ P ] ] [ P ]	[ P ] [ P ] [ P ] [ P ]	[ ] <b>*</b>			
COMPARE [ /	] [ ]		[ ]			
RECOMMENDATIONS:	(If differe	ent from NASA)				
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* CIL RETENTION	RATIONALE: (If	applicable) ADEQUATE				
		INADEQUATE	•			
REMARKS: THE FUNCTION OF THIS ITEM IS TO PROVIDE POWER TO ONE CIRC. PUMP. LOSS OF ALL REDUNDANCY MEANS LOSS OF POWER TO ONE CIRC. PUMP. LOSS OF ONE CIRC. PUMP WILL NOT RESULT IN LOSS OF LIFE OR VEHICLE NOR WILL IT RESULT IN LOSS OF MISSION. LOSS OF A CIRC.						

PUMP IS CRITICALITY 3/1R.

ASSESSMENT DATE: ASSESSMENT ID: NASA FMEA #:	HYDWSB-8	841 00400-1F		BASELINE NEW	
	HYD/WSB 841 HYD CIRC	C PUMP SW	29		
LEAD ANALYST:	J. DUVAI				
ASSESSMENT:					
CRITICAL FLIGH		REDUNDANG	CY SCREE	ns	CIL ITEM
HDW/FU		A	В	С	
NASA [ 3 /1R IOA [ 3 /3	] [	P ] [ NA] [	P ] NA]	[ P ] [ NA]	[ ] *
COMPARE [ /N	] [	и ] [	N ]	[ N ]	[ ]
RECOMMENDATIONS:	(If di	ifferent	from NAS	A)	
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* CIL RETENTION	RATIONALI	E: (If app			
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THE FUNCTION OF OPERATION. APU STHERE IS NOT REDUATER THIS FAILU	SWITCH TUUNDANT CA	JRNS OFF	PUMP DUR	ING APU OPE	RATION.

ASSESSMENT DATE: ASSESSMENT ID: NASA FMEA #:	UVDWCD_04	2 400-1D		NASA DATA BASELINE NEV		]
MDAC ID:	HYD/WSB 842 HYD CIRC	PUMP SW	29			٠
LEAD ANALYST:	J. DUVAL					ta e i i i i
ASSESSMENT:						
CRITICAL FLIGH	ITY R	EDUNDAN	CY SCREE		CIL	
HDW/FU	NC A	,	В	С		
NASA [ 3 /1R IOA [ 3 /1R	[ P	· ] [	P ] NA]	[ P ] [ P ]	[	] <b>*</b> ]
COMPARE [ /	] [	] [	N ]	[ ]	E	]
RECOMMENDATIONS:	(If dif	ferent	from NAS	SA)		
	] [	] [	NA]	[ ]	[ ADD/E	] ELETE
* CIL RETENTION	RATIONALE:	(If ap	plicable	e) ADEQUATE INADEQUATE	[	]
REMARKS: SCREEN B NOT APP	PLICABLE FO	R STAND	BY REDUI	NDANCY.		

NASA DATA:

ASSESSMENT DATE: ASSESSMENT ID: NASA FMEA #:	HYDWSB-84	3		NASA DATA: BASELINE NEW	
SUBSYSTEM: MDAC ID: ITEM:	HYD/WSB 843 HYD CIRC	PUMP SW	29	-	
LEAD ANALYST:	J. DUVAL				
ASSESSMENT:					
CRITICAL FLIGH		EDUNDANC	Y SCREENS	5	CIL ITEM
	NC A		В	С	
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INADEQUATE [ ]  REMARKS:  THE FUNCTION OF THIS ITEM IS TO PROVIDE POWER TO ONE CIRC. PUMP.  LOSS OF ALL REDUNDANCY MEANS LOSS OF POWER TO ONE CIRC. PUMP.  LOSS OF ONE CIRC. PUMP WILL NOT RESULT IN LOSS OF LIFE OR VEHICLE  NOR WILL IT RESULT IN LOSS OF MISSION. LOSS OF A  CIRC. PUMP IS CRITICALITY 3/1R.					

ASSESSMENT DATE: ASSESSMENT ID: NASA FMEA #:	1/08/87 HYDWSB-844 05-6G-200400-1H	NASA DAT BASELIN NE				
SUBSYSTEM: MDAC ID: ITEM:	HYD/WSB 844 CURRENT LIMITER F	RESISTOR, 1.21K				
LEAD ANALYST:	J. DUVAL					
ASSESSMENT:						
CRITICAI FLIGH	ITY REDUNDANC	CY SCREENS	CIL ITEM			
	NC A	В С				
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RECOMMENDATIONS:	(If different f	from NASA)				
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* CIL RETENTION RATIONALE: (If applicable)  ADEQUATE [ ]  INADEQUATE [ ]						
REMARKS: THE FUNCTION OF THIS ITEM IS TO PROVDE POWER TO ONE CIRC. PUMP. LOSS OF ALL REDUNDANCY MEANS LOSS OF POWER TO ONE CIRC. PUMP. LOSS OF ONE CIRC. PUMP WILL NOT RESULT IN LOSS OF LIFE OR VEHICLE NOR WILL IT RESULT IN LOSS OF MISSION. LOSS OF A CIRC. PUMP IS CRITICALITY 3/1R.						

ASSESSMENT DATE: ASSESSMENT ID: NASA FMEA #:	1/08/87 HYDWSB-845 05-6G-20040	00-1G	NASA DATA BASELINE NEW			
MDAC ID:	HYD/WSB 845 FUSE F7, F1	15				
LEAD ANALYST:	J. DUVAL					
ASSESSMENT:						
CRITICAL: FLIGHT		DUNDANCY SCREENS	}	CIL ITEM		
	NC A	В	С			
NASA [ 3 /1R IOA [ 3 /1R	] [ P ]	] [P] [ ] [P] [	P ] P ]	[ ] *		
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RECOMMENDATIONS:	(If diffe	erent from NASA)				
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ASSESSMENT DATE: ASSESSMENT ID: NASA FMEA #:		. <b>A</b>	NASA DATA BASELINE NEW	
	HYD/WSB . 846 PWR SW S25			
LEAD ANALYST:	J. DUVAL			
ASSESSMENT:				
CRITICAL FLIGH		DANCY SCREI	ens	CIL ITEM
HDW/FU		В	С	****
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IS CRITICALITY 3/1R.

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LEAD ANA	LYS	ST:	J. I	IAVU	<b></b>						
ASSESSME	NT:	1									
	CRI	TICAL FLIGH			REDUN	DANG	CY SCR	EENS	5	CII	
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ASSESSMENT DATE: ASSESSMENT ID: NASA FMEA #:	1/08/87 HYDWSB-8 05-6G-20	348 980-2		NASA DATA BASELINE NEW	
SUBSYSTEM: MDAC ID: ITEM:	848	RIVER, TY	PE IV		
LEAD ANALYST:	J. DUVAL	j			
ASSESSMENT:					
CRITICAL		REDUNDANC	Y SCREEN	S	CIL ITEM
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REMARKS: AFTER FURTHER RE	VIEW/ANAI	LYSIS IOA	CONCURS	WITH THE N	ASA FMEA/CIL

ASSESSMENT ASSESSMENT NASA FMEA	ID:	1/08/8 HYDWSB 05-6G-	-849					ASA DATA BASELINE NEW		]
SUBSYSTEM: MDAC ID: ITEM:		HYD/WS 849 HYBRID		VER,	түрг		=	it ail		
LEAD ANALY	ST:	J. DUV	AL							
ASSESSMENT	•									
CR	ITICAL		RE	DUND	NCY	SCREE	ens		CIL	
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ASSESSMENT DATE: ASSESSMENT ID: NASA FMEA #:	1/08/87 HYDWSB-8 05-6G-26		2	NASA DATA BASELINE NEW	
	HYD/WSB 850 RPC				
LEAD ANALYST:	J. DUVA	Ľ			T to the second
ASSESSMENT:					
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SUBSYSTE MDAC ID:	M:		HYD/W 851 RPC	SB													
LEAD ANA	LYST	:	J. DU	VA:	<sub>C</sub>												
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RECOMMEN	DATI	ons:	(If	<b>d</b> :	if	fere	nt	fr	om 1	NASA	)						•
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LEAD ANA	LYSI	C:	J. DU	VAL								
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LEAD ANA	LYS	T:		J.	שמע	/A]	٥												
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REMARKS: SCREENS		UI	LD E	E B	LANI	K :	PEI	R NS	STS	-2	22	06.							

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SUBSYSTI MDAC ID: ITEM:				HYD 854 BLO			; [	DIOD	ES,	G	ROU	IND	MI	M	(-1A,	-31	A)		
LEAD AND	ALY	ST	:	J.	DUV	ΑI	ı								. 5				
ASSESSMI	ENT	:																	
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ASSESSMENT DAT ASSESSMENT ID: NASA FMEA #:	E: 1/08/8 HYDWSB 05-6G-	-855	JC	NASA DAT BASELIN NE	E [	]
SUBSYSTEM: MDAC ID: ITEM:	HYD/WS 855 BLOCKI		S, (-1A,	-3A)		
LEAD ANALYST:	J. DUV	AL				
ASSESSMENT:						
CRITIC FLI HDW/	GHT	REDUND A	ANCY SCRI	EENS C	CIL	=
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* CIL RETENTIO	N RATIONA	LE: (If	applicab	le) ADEQUATE INADEQUATE		]
SCREENS SHOULD	BE BLANK	PER NST	S-22206.			

ASSESSME ASSESSME NASA FME	NΤ	ID		HY	08/8 DWSB -6G-	3-8				I							NE	: [ [		
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ASSESSMENT DATE: ASSESSMENT ID: NASA FMEA #:	1/08/87 HYDWSB-856 05-6G-200100-10B	NASA DATA BASELINE NEW	[ ]									
SUBSYSTEM: MDAC ID: ITEM:	HYD/WSB 856 RESISTOR, CURRENT LIMITER	R (2.15K)										
LEAD ANALYST:	J. DUVAL											
ASSESSMENT:												
CRITICALITY REDUNDANCY SCREENS CIL FLIGHT ITEM HDW/FUNC A B C												
HDW/FU	INC A B	C										
NASA [ 3 /3 IOA [ 3 /3	] [ ] [ ] ] [ NA] [ NA]	[ ] [ NA]	[ ] *									
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	RATIONALE: (If applicable)	) ADEQUATE INADEQUATE	[ ]									
<del></del>	REMARKS: SCREENS SHOULD BE BLANK PER NSTS-22206.											

ASSESSME ASSESSME NASA FME	NT :	ID:	HYD	/08/87       NASA DATA:         YDWSB-857       BASELINE [ ]         5-6G-200100-10B       NEW [ X ]										
SUBSYSTE MDAC ID: ITEM:	М:		857	HYD/WSB 357 RESISTOR, CURRENT LIMITER (2.15K)										
LEAD ANALYST: J. DUVAL														
ASSESSME	NT:													
	1	TICAL FLIGH	T			OUNDAN		SCRI	EEN		CII ITI			
	H	DW/FU	NC		A		В			С				
NASA IOA	[ :	3 /3 3 /3	]	[	NA	] [	N?	]	[ [	NA]	[	]	*	
COMPARE	[	/	1	ĺ	N :	] [	N	]	[	N ]	[	]		
RECOMMEN	DAT:	ions:	(3	[f di	Lffe	erent	fro	om N2	ASA	)				
	[	/	]	[	•	] [		]	(	] (2	[ \DD/I	) DELI	ETE)	
* CIL RE	TEN'	TION	RATI(	ONALE	ጀ:	(If ap	pli	cabl		ADEQUATE NADEQUATE		]		
	REMARKS: SCREENS SHOULD BE BLANK PER NSTS-22206.													

ASSESSMENT DATE: ASSESSMENT ID: NASA FMEA #:	1/08/87 HYDWSB-858		NASA DATA: BASELINE [ ] NEW [ X ]									
SUBSYSTEM: MDAC ID: ITEM:	HYD/WSB 858 RESISTOR,	R (5.1K)										
LEAD ANALYST:	J. DUVAL											
ASSESSMENT:												
CRITICALITY REDUNDANCY SCREENS CIL FLIGHT ITEM												
HDW/FU		В	С	11211								
NASA [ / IOA [ 3 /3	] [ NA	[ NA]	[ ] [ NA]	[ ] * [ ]								
COMPARE [ N /N	) [ N	] [ N ]	[и]	[ ]								
RECOMMENDATIONS:	(If diff	erent from NAS	<b>A</b> )									
[ 3 /3	] [ NA	.] [ NA]	[ NA] (Ai	[ ] DD/DELETE)								
* CIL RETENTION	RATIONALE:		) ADEQUATE INADEQUATE	[ ]								
REMARKS:	REMARKS:											

ASSESSMEI ASSESSMEI NASA FMEI	I TN	D:	1/08/8 HYDWSF 05-6G-	0	59 0100-	10B		NASA DATA BASELINI NEV				
SUBSYSTEM: HYD/WSB MDAC ID: 859 ITEM: RESISTOR, CURRENT LIMITER (5.1K)												
LEAD ANA	LYST	<b>':</b>	J. DUV	/AL			=					
ASSESSME	T.											
•		'ICAL 'LIGH'			REDUN	DANCY	SCRI	EENS	5	CII		
	HD	W/FU	NC		A	E	3		С			
NASA IOA	[ 3 [ 3	/3	]	[	] NA]	[ ]	IA]	[	NA]	[	] ;	t
COMPARE	[	/	]	[	и ]	[ ]	r j	[	N ]	[	]	
RECOMMEN	DATI	ons:	(If	di	ffere	nt fr	om NA	ASA)	· •			
	[	/	]	[	]	[	]	[	] (2	[ ADD/I	] DELET	ľE)
* CIL RE	TENT	NOI!	RATION	ALE	: (If	appl	.icab]		ADEQUATE IADEQUATE		]	
REMARKS:	דוזטט	ם מ	שאגזם	שמ	ם אכייי	S-222	206					

ASSESSMENT DATE: ASSESSMENT ID: NASA FMEA #:	1/08/87 HYDWSB-86 05-6G-208			NASA DATA BASELINE NEW	[ ]
SUBSYSTEM: MDAC ID: ITEM:	HYD/WSB 860 SWITCH, H	HYD MAIN	PUMP PRE	SS (S26,27	,28)
LEAD ANALYST:	J. DUVAL				
ASSESSMENT:		.—			
CRITICA FLIGH HDW/FU	HT	REDUNDANO A	CY SCREEN B	rs C	CIL ITEM
NASA [ 2 /11 IOA [ 2 /11	R ] [ ]	P ] [ P ] [	P ] [	[ P ] [ P ]	[ X ] * [ X ]
COMPARE [ /	]	] [	] [	]	[ ]
RECOMMENDATIONS	: (If di	fferent	from NASA	7)	
[ /	] [	] [	) [	[ ] (A	[ ] DD/DELETE
* CIL RETENTION	RATIONALE	: (If ap		ADEQUATE NADEQUATE	[ X ]
REMARKS:					

ASSESSMEI ASSESSMEI NASA FME	NASA DATA: BASELINE [ ] NEW [ X ]													
SUBSYSTEM MDAC ID: ITEM:	· · · · · · · · · · · · · · · · · · ·								, 28	3)				
LEAD ANA	LYST:	J.	DUVA	L										
ASSESSME	NT:						•							
(		ALITY GHT FUNC		REDUNDANCY SCREENS  A B C						CIL ITEM				
NASA IOA	[ 2 /	1R ]	<u>[</u>	P	]	[ P	]	[	P ] P ]		[	X X	]	*
COMPARE	[ /	]	. [		]	[	]	[	]		[		]	
RECOMMENI	DATION	s:	(If d	lifí	eren	t fr	om NAS	SA)						
	[ /	]	[		]	[	j	[	]	(Al	[ /DC	/DF	] :LF	ETE )
* CIL RET	<b>TENTIO</b>	n RAI	IANOI!	Æ:	(If	appl:	icable		ADEQUA		[	x	]	

ASSESSMENT DATE: ASSESSMENT ID: NASA FMEA #:	HYDWSB-86			NASA DATA BASELINE NEW	[	]							
SUBSYSTEM: MDAC ID: ITEM:	HYD/WSB 862 RESISTOR												
LEAD ANALYST:	J. DUVAL												
ASSESSMENT:													
CRITICALITY REDUNDANCY SCREENS CIL FLIGHT ITEM HDW/FUNC A B C													
NASA [ 3 /3 IOA [ 3 /3	] [ N	] [ A] [	] NA]	[ ] [ NA]	[	] *							
COMPARE [ /	] [ N	] [	и ]	[и]	[	]							
RECOMMENDATIONS:	(If dif	ferent	from NAS	SA)	<b>.</b>								
/	1. [	] [	1	[ ] (A)	[ DD/DI	] ELETE							
REMARKS:	* CIL RETENTION RATIONALE: (If applicable)  ADEQUATE [ ]  INADEQUATE [ ]  REMARKS: SCREEN SHOULD BE BLANK PER NSTS-22206.												
SCREEN SHOOLD BE	DIMIN PER	. 11010-2	2200.										

ASSESSMENT ASSESSMENT	ID:	HYDWSB	-863		NASA DATA: BASELINE [ ] NEW [ X ]									
NASA FMEA #	:	05-6G-	2001	.00-10	A			NEW	[ X	J				
SUBSYSTEM: MDAC ID: ITEM:		HYD/WS 863 RESIST		(1.88	()									
LEAD ANALYS	T:	J. DUV	'AL											
ASSESSMENT:														
	TICAL		RE	DUNDA	NCY	SCREE	ENS	;	CIL	м				
	FLIGHT DW/FUN		A		В			С	1111	•				
NASA [ IOA [	3 /3 3 /3	]	[ [ NA	7]	[ [ N2	]	[	] NA]	[	] <b>*</b>				
COMPARE [	/	]	[ N	]	[ и	]	[	и ]	[	]				
RECOMMENDAT	ions:	(If	diff	erent	fro	om NAS	SA)							
Ĺ	/	]	[	]	[	]	[	] (A)	[ DD/DI	] ELETE)				
* CIL RETEN	TION 1	RATIONA	LE:	(If a	ppl:	icable		ADEQUATE IADEQUATE	[	]				
REMARKS: SCREEN SHOU	ILD BE	BLANK	PER	NSTS-	-2220	06.								

ASSESSMENT DATE: ASSESSMENT ID: NASA FMEA #:												
SUBSYSTEM: MDAC ID: ITEM:	AC ID: 864											
LEAD ANALYST: J. DUVAL												
ASSESSMENT:												
CRITICALITY REDUNDANCY SCREENS FLIGHT HDW/FUNC A B C												
NASA [ 3 /3 IOA [ 3 /3	] [ ] [ ] ] [ NA] [ NA]	[ ] * [ ] * [ NA]										
COMPARE [ /	] [N] [N]	[ N ]										
RECOMMENDATIONS:	(If different from NAS	SA)										
[ /	] [ ] [ ]	[ ] [ ] (ADD/DELETE										
* CIL RETENTION :												

ASSESSMENT DATE: 1/08/87  ASSESSMENT ID: HYDWSB-865  NASA FMEA #: 05-6G-200100-10B  NASA FMEA #: NASA DATA: BASELINE NEW												
SUBSYSTEM: HYD/WSB MDAC ID: 865 ITEM: RESISTOR, (2.2K)												
LEAD ANA	LYST:	J. DUV	<b>AL</b>									
ASSESSMENT:												
	CRITICALITY REDUNDANCY SCREENS CIL ITEM											
	HDW/FU	NC	A		В			С				
NASA IOA	[ 3 /3 [ 3 /3	]	[ N2	] A]	[ [ N	] A]	[	NA]	[	] * ]		
COMPARE	[ /	]	[ N	]	[ N	]	[	n ]	[	]		
RECOMMEN	DATIONS:	(If	dif	fere	nt fr	AN mc	SA	)				
	[ /	]	[	]	[	]	[	] (A	[ DD/D	] ELETE)		
	* CIL RETENTION RATIONALE: (If applicable)  ADEQUATE [ ] INADEQUATE [ ]											
	REMARKS: SCREEN SHOULD BE BLANK PER NSTS-22206.											

ASSESSMENT DATE:		NASA DATA: BASELINE [ ]										
ASSESSMENT ID: NASA FMEA #:	00-11				BAS	NEW			]			
SUBSYSTEM: MDAC ID: ITEM:	HYD/WSB 866 FUSE (12	A, :	F14)									
LEAD ANALYST:	J. DUVAI	Ľ										
ASSESSMENT:							-					
CRITICAI FLIGH		RE	DUNDAN	CY	SCREE	NS				CL CEM	1	
HDW/FU		A		В			С					
NASA [ 3 /1F IOA [ 3 /1F	[	P P	] [	P F	]	[ [	P ] P ]		[	x	]	*
COMPARE [ /	] [		] [	N	]	[	]		[	N	]	
RECOMMENDATIONS:	(If d	iff	erent	fro	om NAS	A)						
[ /	] [		] [		]	[	]	(A)		/DI		TE)
* CIL RETENTION REMARKS:	RATIONALI	E:	(If ap	pli	cable			QUATE QUATE	[		]	
IOA CONCURS WITH	H SCREEN I	В										

ASSESSMEI ASSESSMEI NASA FMEZ	NT I	D:	1/08/8 HYDWS 05-6G	B-8				NASA DATA: BASELINE [ ] NEW [ X ]					
SUBSYSTEM MDAC ID:			HYD/WS 867 CURRE		LIMIT	ER RE	SIST	OR (1	L.21K	)			
LEAD ANA	LYST	:	J. DU	VAL	ı								
ASSESSME	NT:												
(		'ICAL 'LIGH'	ITY T		REDUN	DANCY	SCR				CIL		
	HD	W/FU	NC		A	В	3	(	3				
NASA IOA	[ 3 [ 3	/3	]	[	NA]	[ [ N	] [A]	] 1	] NA]		[	] <b>*</b>	
COMPARE	[	/	]	[	и ]	[ N	]	[ 1	1 ]		[	]	
RECOMMEN	DATI	ons:	(If	di	ffere	nt fr	om N	ASA)					
	[	/	]	[	]	(	)	[	]	(A)	[ DD/D	] ELETE)	
* CIL RET	TENT	'ION I	RATION	ALE	: (If	appl	icab	1	ADEQU ADEQU	ATE ATE	[	]	
SCREEN S	HOUL	D BE	BLANK	PE	R NST	S-222	06.						

ASSESSMEI NASA FMEI	NT I	D:	HYDWS		ГĦ				ASA DA BASELI N		[	X	]		
SUBSYSTEM MDAC ID:	м:		HYD/WS 868 CURREN		IMIT	ER RE	SISTO	R (	(1.	. 21K)					
LEAD ANA	LYST	:	J. DU	/AL			Ē.							:-:	: -
ASSESSME	NT:														
(	F	ICALI LIGHT		R A		DANCY B	SCREI	ENS	S C				[L [EN		
		•							_						
NASA IOA	[ 3	/1R /1R	]	[ P	]	[ P [ F	]	[	P P	]		[	x	]	*
COMPARE	[	/	1	[	)	[ N	]	[		]		[	N	]	
RECOMMEN	DATI(	ons:	(If	dif	fere	nt fr	om NAS	SA)	)						
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* CIL RET	rent:	ION I	RATIONA	ALE:	(If	appl.	icable			DEQUAT DEQUAT	Έ	]		]	
IOA CONCI	URS	WITH	SCREEN	1 В.					1			.* .			

ASSESSMENT ASSESSMENT NASA FMEA	) LOO-11	H					ASA DAT BASELIN NE								
SUBSYSTEM: MDAC ID: ITEM:			HYD/W 869 CURRE		LI	MITE	R I	RES	sis	TOR	(1.	.21K)			
LEAD ANALY	ST:	:	J. DU	VAI	<u>.</u>										
ASSESSMENT	:														
CR		CALI	CTY C		RE	EDUND	AN	CY	sc	REEN	S			IL TEN	1
	HDV	V/FUI	1C		A	÷-		В			С				
NASA [ IOA [	3 3	/1R /1R	]	[	P P	]	[	P F	]	[ [	P P	]	]	х	]. <b>*</b>
COMPARE [		/	]	[		]	[	N	]	[		]	[	N	]
RECOMMENDA	TIC	ons:	(If	di	lff	feren	t :	fro	om	NASA	)				
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* CIL RETE	NT]	ON I	RATION	ALE	E:	(If	ap)	pl:	ica		Αľ	DEQUATE DEQUATE			]
REMARKS: IOA CONCUR	s v	NITH	SCREE	N E	3										* . * . *

ASSESSMENT DATE: ASSESSMENT ID: NASA FMEA #:	1/08/87 HYDWSB-8 05-6G-20		į.	NASA DATA BASELINE NEW	
SUBSYSTEM: MDAC ID: ITEM:	HYD/WSB 870 CURRENT	LIMITER	RESISTO	R (1.21K)	
LEAD ANALYST:	J. DUVA	<b>L</b>			
ASSESSMENT:					
CRITICAL: FLIGH		REDUNDA	NCY SCREI	ENS	CIL ITEM
HDW/FU	NC	A	В	C	
NASA [ 3 /3 IOA [ 3 /3	] [	NA]	[ NA]	[ NA]	[ , ] , *
COMPARE [ /	] [	N ]	[ N ]	[ N ]	[ ]
RECOMMENDATIONS:	(If d	ifferent	from NAS	SA)	
	] [	]	[ ]	[ ] (A	[ ] DD/DELETE)
* CIL RETENTION	RATIONAL	E: (If a	pplicable	e) ADEQUATE INADEQUATE	
REMARKS: SCREEN SHOULD BE	BLANK P	ER NSTS-	22206.		

ASSESSME ASSESSME NASA FME	TV	II		HY	HYDWSB-871 BASELI 05-6G-200100-1JG										[	x	]				
SUBSYSTE MDAC ID: ITEM:				87	D/WS 1 OCKI		3 I	OIC	DDE	(1	L5 <i>I</i>	<del>1</del> )		-							
LEAD ANA	LYS	ST:	:	J.	DUV	/Al	L														
ASSESSME	NT:	;																			
		FI	CAL LIGH	Г				EDU	JNDA	NC		SC	REEN						IL PEN	1	
	ŀ	IDV	V/FUI	NC.			A				В			С							
NASA IOA	]	3	/3 /1R	]		[	F	]		[ [	F	]	]	P	]			[	х	]	*
COMPARE	[		/N	]		[	N	]		[	N	]	[	N	J			[	N	]	
RECOMMEN	IDA'I	CIC	ons:		(If	d:	Ĺfſ	er	cent	f	fro	om I	NASA	)							
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* CIL RE	TE1	T	CON 1	RAI	IONA	LI	Ξ:	(1	[f a]	pŗ	<b>1</b> 1	ical				'AUÇ	TE TE	[		]	
REMARKS: CONCUR W	ITI					MI	ENI	۲.	DAI	M.Z	\G]	ING	TRAI			•		-	GF	ROU	- JND

	1/08/87 HYDWSB-872 05-6G-2001			NASA DATA: BASELINE NEW		]
SUBSYSTEM: MDAC ID: ITEM:	HYD/WSB 872 BLOCKING D	DIODE (15	<b>Y</b> )		•	
LEAD ANALYST:	J. DUVAL					
ASSESSMENT:						
CRITICAL FLIGH HDW/FU	T	EDUNDANCY B		С	CIL ITEM	
NASA [ 3 /1R IOA [ 3 /1R	] [ P ] [ P	] [ F ] [ F	] [	P ] P ]	X ]	] <b>*</b>
COMPARE [ /	] [	] [	] [	]	[	]
RECOMMENDATIONS:	(If diff	ferent fro	om NASA)			
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* CIL RETENTION	RATIONALE:	(If appl:		ADEQUATE ADEQUATE	[ X	]
REMARKS:			•	<del></del> -	•	-

ASSESSMI	ASSESSMENT DATE: 1/08/87 ASSESSMENT ID: HYDWSB-872A NASA FMEA #: 05-6G-200100-								IJ	FA						ASA D BASEL		[	х	]	
SUBSYSTI MDAC ID: ITEM:				87			· I	DIODE	<b>S</b> (	(1	5 <i>1</i>	۲)									
LEAD AN	ALY	ST	:	J.	DUV	ΑL	ì														,
ASSESSMI	ENT	:																			
CRITICALITY REDUND. FLIGHT HDW/FUNC A							AI		Y B	sc	CREE	ENS	c				IL FEN	4			
NASA IOA	[	3	/1R /1R	]		[	P P	]		[	F F	]		]	P P	]		[	X X	]	*
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* CIL R	ETE	NT:	ION 1	RAT:	IONA	LE	:	(If	aı	qq	<b>1</b> i	Lca	ble			DEQUA DEQUA		[	x	]	

REMARKS:

ASSESSMENT DATE: ASSESSMENT ID: NASA FMEA #:	1/08/87 HYDWSB-87 05-6G-200		JΕ	NASA DATA BASELINE NEW	
SUBSYSTEM: MDAC ID: ITEM:	HYD/WSB 873 BLOCKING	DIODE	(12A)		
LEAD ANALYST:	J. DUVAL				
ASSESSMENT:					
CRITICAL		REDUNDA	ANCY SCREI	ens	CIL ITEM
FLIGH HDW/FU		<b>L</b>	В	С	112
NASA [ 3 /3 IOA [ 3 /3	] [ N	IA] IA]	[ NA] [ NA]	[ NA] [ NA]	[ ] *
COMPARE [ /	] [	]	[ ]	[ ]	[ ]
RECOMMENDATIONS:	(If di	feren	t from NAS	SA)	
, , , , , , , , , , , , , , , , , , , ,	] [	]		[ ] (A	[ ] ADD/DELETE)
* CIL RETENTION	RATIONALE:	(If a	applicable	ADEQUATE	
REMARKS:			ū	INADEQUATE	[ ]

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	SYSTE C ID: M:				87	ZD/WS 74 LOCK:		G I	DIOD	Œ	(12.	A)								
LEA	D ANA	ALY	ST	:	J.	יטם.	VA:	Ç.												
ASS	ESSME	ENT	:																	
		CR		ICAL LIGH		Č		RI	EDUN	IDAI	NCY	sc	REEN	IS			C:	L EN	1	
		•	HD	W/FU	NC			A			В			С						
	NASA IOA	[	3 3	/1R /1R	]		[	P P	]		[ F	]	[ [	P	]		]	X X	]	*
COM	IPARE	C		/	]		[		]		[	]	(	•	]		[		]	
REC	OMMEN	IDA'	TI	ons:		(If	d.	if	fere	nt	fr	om 1	NASA	(۱						
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* C	IL RI	ETE:	NT:	ION :	RAT	TION	ΑL	E:	(If	a	ppl	ical		A	DEQ!		[	x	]	
DEM	NDVC.						-													

ASSESSMENT DAT ASSESSMENT ID: NASA FMEA #:	HYDWS		.В	NASA DATA BASELINI NEV	] 3	x ]
SUBSYSTEM: MDAC ID: ITEM:	HYD/W 875 LG RE	SB TRACT/CIF	RC VLV SW			
LEAD ANALYST:	J. DU	VAL				
ASSESSMENT:						
FLI	ALITY GHT FUNC	REDUNE A	DANCY SCRE B	C C	CI	L EM
NASA [ 3 /	3 ] 3 ]	[ NA] [ NA]	[ NA] [ NA]	[ NA] [ NA]	]	] * ]
COMPARE [ /	]	[ ]	[ ]	[ ]	[	]
RECOMMENDATION	s: (If	differer	nt from NA	ASA)		
	]	[ ]	[ ]	[ ]		] DELETE
* CIL RETENTIO	N RATION	ALE: (If	applicabl	Le) ADEQUATE INADEQUATE		]
REMARKS:						

ASSESSME ASSESSME NASA FME	NT D. NT I A #:	ATE: D:	1/0 HYD 05-	8/87 WSB-8 6G-20	376 00300-	1A <sub>.</sub>			SA DAT ASELIN NE			
SUBSYSTE MDAC ID: ITEM:	M:		876		ACT/CI	RC VI	JV SW				<b>3</b> 1	
LEAD ANA	LYST	:	J. :	DUVA	<b>ن</b> .							
ASSESSME	NT:											
		ICAL LIGH			REDUN	DANCY	SCR	REENS		CI:		
	_		_		A	E	3	C		11.	C.F1	
NASA IOA	[ 3 [ 3	/1R /3	]	]	P ] NA]	[ ] [ N	ia]	9 [ NA	]	[ [	] * ]	
COMPARE	[	/N	]	[	N ]	[ ]	r j	[ N	]	[	]	
RECOMMEN	DATI	ons:	(	If d	iffere	nt fr	om N	IASA)				
	[	/3	]	[	]	ĺ	]	[	] (		] DELETE	)
* CIL RE	TENT	ION 1	RATI	ONALI	E: (If	appl	icab	AD	EQUATE EQUATE	[	]	
REMARKS: SPLIT IN SEPARATE						FAII	s in			_		BE

ASSESSMENT DATE: ASSESSMENT ID: NASA FMEA #:			NASA DATA BASELINI NEV	
SUBSYSTEM: MDAC ID: ITEM:	HYD/WSB 877 LG RETRACI	r/circ vlv sw	,	
LEAD ANALYST:	J. DUVAL			* <del>*</del> ** .**
ASSESSMENT:				
CRITICAL FLIGH		EDUNDANCY SCR		CIL ITEM
HDW/FU	NC A	В	С	
NASA [ 3 /1R IOA [ 2 /1R	] [ P ] [ P	] [ P ] ] [ F ]	[ P ] [ P ]	[ ] * [ X ]
COMPARE [ N /	] [	] [ N ]	[ ]	[и]
RECOMMENDATIONS:	(If diff	ferent from N	(ASA)	
	] [	] [ ]	[ ] (2	[ A ] ADD/DELETE)
* CIL RETENTION	RATIONALE:	(If applicab	ole) ADEQUATE INADEQUATE	
REMARKS: SPLIT INTO TWO F				

SPLIT INTO TWO FMEA'S. SWITCH FAILS IN "GPC" POSITION SHOULD BE SEPARATE FROM "OPEN" POSITION.
SWITCH IN "OPEN" POSITION REMOVES ONE LEVEL OF ISOLATION FROM "RETRACT" HYDRAULIC CIRCUIT. REDUNDANT S/O VALVE AND L.G. DUMP SOLENOID MUST ALSO FAIL. IOA CONCURS WITH NASA CRITICALITY AND

SCREENS.

ASSESSMEN ASSESSMEN NASA FME	NT ID:	1/08/8 HYDWSE 05-6G-	3-878					NASA DAT BASELIN NE	1E (	X	]
SUBSYSTEM MDAC ID:	M:	HYD/WS 878 INDICA									
LEAD ANA	LYST:	J. DUV	7AL								
ASSESSME	NT:										
(	CRITICAL FLIGH HDW/FU	T	RI A	EDUND	ANCY E	SCRE	ENS	c c		CIL	Ī
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COMPARE	[ /	]	[	]	[	]	[	]	(		]
RECOMMEN	DATIONS:	(If	difi	feren	ıt fr	om NA	SA)				
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* CIL RE	rention 1	RATIONA	LE:	(If	appl	icabl.		ADEQUATE IADEQUATE		•	]
REMARKS:									_		

ASSESSME ASSESSME NASA FME		1/08/87 HYDWSB- 05-6G-2			NASA DA' BASELI N		]
SUBSYSTE MDAC ID:	M:	HYD/WSB 879 RESISTO		RENT LIMIT	ER (1.21K)		
LEAD ANA	LYST:	J. DUVA	L				
ASSESSME	NT:						
	CRITICAL FLIGH	T		DANCY SCRE		CIL ITE	
	HDW/FU		A	В	С		
NASA IOA	[ 3 /3 [ 3 /3	] [	NA] NA]	[ NA] [ NA]	[ NA] [ NA]	]	] *
COMPARE	[ /	] [	]	[ ]	[ ]	[	]
RECOMMEN	DATIONS:	(If d	iffere	nt from NA	SA)		
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* CIL RE	TENTION	RATIONAL	E: (If	applicabl	.e) ADEQUAT INADEQUAT		]

**REMARKS:** 

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SUBSYSTEM MDAC ID:	M:		HYD/WS 880 RESIST	WSB (STOR, CURRENT LIMITER (5.1K)									
LEAD ANA	LYST	:	J. DUT	/AI	,								
ASSESSME	NT:												
•	F	ICALI LIGHT W/FUN	r		REDUN	DANC	Y SCR	EENS	c c		CIL	I	
NASA IOA	[ 3	/3 /3	]	[	NA] NA]	]	NA] NA]	[	NA] NA]	[	·	] <b>*</b>	
COMPARE	[	/	]	[	]	[	3	[	]	[	•	]	
RECOMMEN	DATI	ons:	(If	di	ffere	nt f	rom N	ASA)	<b>)</b>				
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* CIL RE	rent	ION I	RATIONA	ALE	: (If	app	licab	•	ADEQUATE NADEQUATE	-		]	
REMARKS:													

ASSESSMENT DATE: ASSESSMENT ID: NASA FMEA #:	1/08/87 HYDWSB-881 05-6G-2074-1		NASA DATA: BASELINE [ ] NEW [ X ]				
SUBSYSTEM: MDAC ID: ITEM:	HYD/WSB 881 BLOCKING DIODE,	"CLOSE" G	ROUND COMM	AND .			
LEAD ANALYST:	J. DUVAL						
ASSESSMENT:							
CRITICAI FLIGH HDW/FU	IT	NCY SCREEN	c c	CIL ITEM			
NASA [ 3 /3 IOA [ 3 /3	] [ NA] ] [ NA]	[ NA] [ [ NA] [	NA] NA]	[ ] *			
COMPARE [ /	] [ ]	[ ] [	1	[ ]			
RECOMMENDATIONS:	(If different	from NASA	.)				
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* CIL RETENTION	RATIONALE: (If a		ADEQUATE NADEQUATE	[ ]			
REMARKS:							

ASSESSMEN ASSESSMEN NASA FMEA	I TN	D:	1/08/8 HYDWS 05-6G	3-88					NASA DA BASELI N	NE		[ ]	
SUBSYSTEM MDAC ID: ITEM:	M:		HYD/WS 882 BLOCK		DIODE	(RE	TURN	CII	RCUIT)				
LEAD ANA	Lyst	:	J. DU	<b>/AL</b>									
ASSESSME	T:												
(	F	ICAL: LIGHT	r	R A	EDUND	ANCY B		ENS	c c		CII		
NASA IOA	[ 3	/3 /3	]	[ [ N	] [A]	[ [ N	] A]	[	) NA]		[	] ;	*
COMPARE	[	/	]	[ N	]	[ N	]	[	N ]		[	]	
RECOMMENI	ITAC	ons:	(If	dif	feren	t fr	om NA	SA)	)				
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* CIL RET	PENT	ION I	RATION	ALE:	(If	appl	icabl	-	ADEQUAT TAUQADAI		[	]	

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ASSESSMENT DATE: ASSESSMENT ID: NASA FMEA #:	HYDWSB-	883		NASA DATA BASELINE NEW	-
SUBSYSTEM: MDAC ID: ITEM:	HYD/WSB 883 BLOCKIN		(RETURN C	CIRCUIT)	
LEAD ANALYST:	J. DUVA	L			
ASSESSMENT:					
FLIGH'	r		ANCY SCREE		CIL ITEM
HDW/FU	NC	A	В	С	
NASA [ 3 /3 IOA [ 2 /1R	] [	NA] P]	[ NA] [ P ]	[ NA] [ P ]	[ ] * [ X ]
COMPARE [ N /N	] [	N ]	[ N ]	[ N ]	[ N ]
RECOMMENDATIONS:	(If d	ifferent	from NAS	SA)	
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* CIL RETENTION	RATIONAL	E: (If a	applicable	<u>:</u> )	
				ADEQUATE INADEQUATE	
REMARKS: 2/1R CRITICALITY	IS BASE	D ON INA	BILITY TO	CENTER ENG	INE FOR RE
ENTRY. REF. MDA	C ID#497	, FMEA-C	2-6-A06-3	·	-

ASSESSMENT DATE: ASSESSMENT ID: NASA FMEA #:	1/08/87 HYDWSB-884 05-6G-2072-2	NASA DATA: BASELINE NEW	
SUBSYSTEM: MDAC ID: ITEM:	884	TYPE IV, RETURN CIRCU	JIT
LEAD ANALYST:	J. DUVAL		
ASSESSMENT:			
CRITICAL: FLIGHT		ANCY SCREENS	CIL ITEM
	NC A	В С	
NASA [ 3 /1R IOA [ 2 /1R	] [ P ] ] [ F ]	[ F ] [ P ] [ F ] [ P ]	[ X ] * [ X ]
COMPARE [ N /	] [ N ]	[ ] [ ]	[ ]
RECOMMENDATIONS:	(If different	: from NASA)	
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ASSESSMENT DATE: ASSESSMENT ID: NASA FMEA #:	HYDWSB-885	BA	A DATA: SELINE [ ] NEW [ X ]
SUBSYSTEM: MDAC ID: ITEM:	HYD/WSB 885 HYBRID DRIVER,	TYPE IV, RETUR	N CIRCUIT
LEAD ANALYST:	J. DUVAL		
ASSESSMENT:			
CRITICAL FLIGH HDW/FU	T	ANCY SCREENS B C	CIL ITEM
IIDW/ PO	NC A	Б	
NASA [ 3 /3 IOA [ 2 /1R	] [ NA] ] [ P ]	[ NA] [ NA] [ P ]	[ ] * [ x ]
COMPARE [ N /N	] [ N ]	[ N ] [ N ]	[ N ]
RECOMMENDATIONS:	(If differen	t from NASA)	
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* CIL RETENTION	RATIONALE: (If	ADE	QUATE [ ] QUATE [ ]
REMARKS: 2/1R CRITICALITY ENTRY. REF. MDA			ER ENGINE FOR RE

ASSESSMENT DATE: ASSESSMENT ID: NASA FMEA #:	HYDWSB-886	NASA DA BASELI I	ATA: INE [ ] NEW [ X ]							
MDAC ID:	HYD/WSB 886 HYBRID DRIVE									
LEAD ANALYST:	J. DUVAL									
ASSESSMENT:										
		NDANCY SCREENS	CIL ITEM							
FLIGH HDW/FU	NC A	В С	IIIM							
NASA [ 3 /1R IOA [ 2 /1R	] [ P ] ] [ P ]	[ F ] [ P ] [ F ] [ P ]	[ X ] * [ X ]							
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REMARKS: AFTER FURTHER REVALUATION.	VIEW/ANALYSIS	IOA CONCURS WITH TH	E NASA FMEA/CIL							

ASSESSMENT DATE: ASSESSMENT ID: NASA FMEA #:	•	NASA DATA: BASELINE [ ] NEW [ X ]					
MDAC ID:	HYD/WSB 887 HYBRID DRIVER,	TYPE III, VLV CLOS	E CIRCUIT				
LEAD ANALYST: J. DUVAL							
ASSESSMENT:							
CRITICAL FLIGH	LITY REDUND		CIL ITEM				
HDW/FU	INC A	ВС					
NASA [ 3 /3 IOA [ 3 /3	] [ NA] ] [ P ]	[ NA] [ NA] [ P ] [ P ]	[ ] *				
COMPARE [ /	] [ N ]	[ n ]	[ ]				
RECOMMENDATIONS:	(If differen	nt from NASA)					
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	RATIONALE: (If	applicable) ADEQUAT INADEQUAT	• •				
REMARKS: IOA CONCURS, SCF	REENS SHOULD BE	BLANK PER NSTS-2220	6.				

ASSESSMENT DATE: 1/08/87 ASSESSMENT ID: HYDWSB-888 NASA FMEA #: 05-6G-2070-2									NASA DA' BASELII N		
SUBSYSTEMDAC ID:			HYD/W 888 HYBRI		RIVER	/LV OPEN	CIRCU	JIT			
LEAD ANALYST: J. DUVAL											
ASSESSME	NT:										
,		ICAL LIGH		]	REDUN	DANC	Y SCR	EENS	5	CII ITE	<del>-</del>
	HI	W/FU	NC	i	A		В		С		
NASA IOA	[ 3	3 /3	]	[ ] [ ]	NA] NA]	[	NA] NA]	]	NA] NA]	[	] <b>*</b> ]
COMPARE	[	/	]	[	]	[	]	[	]	[	]
RECOMMEN	DATI	ons:	(If	di	ffere	nt f	rom N.	ASA)			-
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REMARKS:	ממוז	e c p	FFNC C	ноп	n BF	RT.A	NK DE		TS-2220	•	,

ASSESSMENT DATA ASSESSMENT ID NASA FMEA #:	HYDWS		BASELINE [ ] NEW [ X ]							
SUBSYSTEM: MDAC ID: ITEM:	HYD/W 889 HYBRI		TYPE II	I, VLV OPEN	CIRCU	JIT				
LEAD ANALYST:	J. DU	VAL								
ASSESSMENT:										
	CALITY IGHT	REDUND	ANCY SCRI		CII					
HDW,	/FUNC	A	В	С						
NASA [ 3 , IOA [ 3 ,	/3 ] /3 ]	[ NA] [ NA]	[ NA] [ NA]	[ AN ] [ AN ]	[	] <b>*</b> ]				
COMPARE [	/ ]	[ ]	[ ]	[ ]	[	]				
RECOMMENDATION	NS: (If	differen	t from N	ASA)						
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* CIL RETENTION	ON RATION.	ALE: (If	applicab	le) ADEQUATI INADEQUATI		]				
REMARKS:				~	·	. •				

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ASSESSMENT ASSESSMENT NASA FMEA	II.	<b>):</b>	1/08/ HYDWS 05-6G	B-8						NASA BASE	LINE		•
SUBSYSTEM: MDAC ID: ITEM:	;		HYD/W 890 BLOCK		D:	IODE,	3 <i>1</i> A	, CL	OSE	CIRCU	IT		
LEAD ANALY	ST:		J. DU	VAI	ı								
ASSESSMENT	?:												
CF	FI	JGHT				DUNDA			EENS			CIL	
	HDW	i/FUN	1C		A		E	}		С			
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REMARKS: IOA CONCUR	RS,	SCRE	EEN SH	OUL	ו סי	BE BI	ANK	PER	NST	'S 222	06.		

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SUBSYSTE MDAC ID: ITEM:			HYD/ 890 BLOG	WSB CKING	DIOD	E, 3A	, CL	OSE C	:IRCU	IT		
LEAD ANA	LYS'	T:	J. I	UVAL							<u> </u>	e le
ASSESSME	NT:											
		TICAL FLIGH DW/FU	T				SCR		<u>:</u>		CII	
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REMARKS:		, SCR	EENS	SHOU	LD BE	BLAN	IK PE	R NST	'S-22	206.		

ASSESSMEN ASSESSMEN NASA FME	NT I	D:	1/08/8 HYDWSI 05-6G-	3-89					NASA DATA BASELINE NEW		
SUBSYSTEM MDAC ID:	M:		HYD/WS 891 MPS/TV		so VL	V CO:	NTROL	sv	· · · ·		
LEAD ANA	LYST	:	דטם . נ	/AL							
ASSESSMEN	NT:										
		ICAL:	[TY	R	EDUND.	ANCY	SCRE	ENS	3	CIL	
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SUBSYSTE MDAC ID: ITEM:			HYD/W 891 MPS/T		iso v	LV CC	NTRO	L SW					
LEAD ANA	LYST	! <b>:</b>	J. DU	VAL									
ASSESSME	NT:												
		'ICAL		. ]	REDUN	IDANCY	SCR	EENS			CI TT	L EM	
		W/FU	NC		A	E			C				
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REMARKS:	פקוז	שדייו	NASA	REDI	INDAN	ICY SO	REEN					•	•

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SUBSYSTE MDAC ID:		HYD/WS 892 MPS/TV		VLV CONTRO	L SW			-
LEAD ANA	LYST:	J. DUV	AL		·			
ASSESSME	NT:							
	CRITICAL FLIGH		REDUI	NDANCY SCR	EENS	CIL		
	HDW/FU		A	В	C	ITE	M	
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COMPARE	[ /	]	[ N ]	[ N ]	[ N ]	[	]	
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REMARKS:	EEN SHOU	I.D. RF P	ד.אאע סע	R NSTS 222		L	1	
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ASSESSME ASSESSME NASA FME	NT	ID:	HYD	8/87 WSB-89 6G-206					NASA D		[	]	
SUBSYSTE MDAC ID: ITEM: POWER CO		ROL	893	/WSB RENT I	IMITER	RE	SISTO	OR (	1.21K)	RE!	rurn	DR:	IVER
LEAD ANA	LY	ST:	J. :	DUVAL									
ASSESSME	NT	:											
		ITICAI FLIGH	ΙΤ	_	EDUNDA						CIL		
	1	HDW/FU	INC	A		В			С				
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COMPARE	[	/	]	[	]	[	]	[	]		[	]	
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SUBSYSTIMDAC ID: ITEM: CONTROL			HYD/ 894 CURF		LIMII	rer :	RES		OR (		) RE	TURN	POWER
LEAD AND	ALYS	ST:	J. [	UVAL									
ASSESSMI	ENT:	:											
		TICAL FLIGH IDW/FU	${f T}$		REDUN A	IDAN	CY B	SCR	EENS	G C		CIL	Ŋ
NASA IOA	[	3 /3 3 /3	]	í ] I ]	NA]	[	NA P	A]	[	NA] P]		[	] *
COMPARE	[	/	]	[ ]	<b>4</b> ]	[	N	]	[	<b>N</b> ]		[	]
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SUBSYSTE MDAC ID: ITEM: DRIVERS		WEI	R CC		REN		LI	MITE	R I	RES	IST	OR	(1.	21K)	OPE	EN/C	CLOS	SE
LEAD ANA	LY	ST	:	J.	DUV	'A]	L											
ASSESSME	ENT	:																
		F	ICAI LIGH W/FU				RE A	DUND	ANG	CY B	SCR	EEN	s C			CII		
		.1101	M/ FC	NC						_			_					
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REMARKS: SCREENS		UC	LD E	E BI	LANK		PER	NST	5 <b>-</b> 2	222	06.							

ASSESSMENT DATE: ASSESSMENT ID: NASA FMEA #:	1/08/87 HYDWSB-8 05-6G-20	96 66 <b>-</b> 1		NASA DATA: BASELINE NEW	
SUBSYSTEM: MDAC ID: ITEM:	896	LIMITER		(1.21K) POW	VER CONTROL
LEAD ANALYST:	J. DUVAL			-	
ASSESSMENT:					
CRITICALI FLIGHT		REDUNDAN	CY SCREE	ens	CIL ITEM
	1C	A	В	C	IIIM
NASA [ 3 /3 IOA [ 2 /1R	] [	NA] [ P ] [	NA] P]	[ NA] [ P ]	[ x ] *
COMPARE [ N /N	] [	N ] [	n j	[ 14 ]	[ N ]
RECOMMENDATIONS:	(If di	fferent	from NAS	SA)	
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* CIL RETENTION F	RATIONALE	: (If ap	plicable	) ADEQUATE INADEQUATE	
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SUBSYSTE MDAC ID:		HYD/ 897 ISOL	WSB ATION D	IODE						•
LEAD ANA	LYST:	J. D	UVAL							
ASSESSME	INT:									
	CRITICAL		REDU	JNDAN	CY SCR	EENS			CI	
	FLIGI HDW/F		A		В	С			11	'EM
NASA IOA	[ 3 /3 [ 3 /3	]	[ NA] [ NA]	[	NA] NA]	[ N.	A] A]		[	] <b>*</b>
COMPARE	[ /	]	[ ]	(	]	[	]		[	]
RECOMMEN	DATIONS:	: (I:	f differ	cent :	from N	ASA)				
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REMARKS:						INA	DEQU	ATE	[	]

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SUBSYSTE MDAC ID:	M:		898	/WSB LATION	DIC	DDE (S	SYSTE	EM 1)					
LEAD ANA	LYS	ST:	J. 1	DUVAL									
ASSESSME	NT:	1			21		- ==			are residence			
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NASA DATA:

ASSESSMENT DATE: ASSESSMENT ID: NASA FMEA #:	HYDWSB-899	NASA DATA: BASELINE NEW	
SUBSYSTEM: MDAC ID: ITEM:	HYD/WSB 899 CONTROLLER, HY	BRID DRIVER, TYPE III	(CLOSE)
LEAD ANALYST:	J. DUVAL		
ASSESSMENT:			
FLIGH	_		CIL ITEM
HDW/FU	NC A	ВС	
NASA [ 2 /1R IOA [ 2 /1R	] [ P ]	[ P ] [ P ] [ F ] [ P ]	[ X ] * [ X ]
COMPARE [ /	] [ ]	[и] [и]	[ ]
RECOMMENDATIONS:	(If differen	nt from NASA)	
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* CIL RETENTION	RATIONALE: (If	applicable) ADEQUATE INADEQUATE	[ X ]
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ASSESSMENT DATE: ASSESSMENT ID: NASA FMEA #:	1/08/87 HYDWSB-900 05-6G-2064-1		NASA DATA: BASELINE NEW	
SUBSYSTEM: MDAC ID: ITEM:	HYD/WSB 900 CONTROLLER, HY	BRID DRIVE	R, TYPE III	(CLOSE)
LEAD ANALYST:	J. DUVAL			
ASSESSMENT:				
CRITICAL: FLIGHT HDW/FUI	r	ANCY SCREE B	ns C	CIL ITEM
NASA [ 3 /3 IOA [ 3 /3	] [ NA] ] [ NA]	[ NA] [ NA]	[ NA] [ NA]	[ ] *
COMPARE [ /	] [ ]	[ ]	[ ]	[ ]
RECOMMENDATIONS:	(If differer	nt from NAS	A)	
[ /	] [ ]	[ ]	[ ] (A)	[ ] DD/DELETE
* CIL RETENTION :	RATIONALE: (If	applicable	ADEQUATE	

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LEAD ANALYST: J. DUVAL																				
ASSESSMI	SSESSMENT:																			
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		HDI	W/FUI	NC.			A				В			С						
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ASSESSMENT ID: NASA FMEA #:	HYDWSB-903 05-6G-2063-1	BASELINE NEV	
SUBSYSTEM: MDAC ID: ITEM:	HYD/WSB 903 INDICATOR (DS1,2	2,3)	
LEAD ANALYST:	J. DUVAL		
ASSESSMENT:			
CRITICAL FLIGH		ICY SCREENS	CIL ITEM
HDW/FU	NC A	ВС	
NASA [ 3 /3 IOA [ 3 /3	] [ NA] [ ] [ NA] [	NA] [NA] NA] [NA]	[ ] .*
COMPARE [ /	] [ ] [	. 1 [ ]	[ ]
RECOMMENDATIONS:	(If different	from NASA)	
	] [ ] [	[ ] [ ]	[ ] ADD/DELETE
* CIL RETENTION	RATIONALE: (If ap	oplicable) ADEQUATE	
REMARKS:		INADEQUATE	[ ]

1/08/87 HYDWSB-904 05-6G-2063-1	BASELIN	
HYD/WSB 904 INDICATOR (DS)	L,2,3)	
J. DUVAL		
ITY REDUNI I NC A	DANCY SCREENS  B C	CIL ITEM
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LEAD ANA	LYST:		J.	DUVAL	•								
ASSESSME	NT:												
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LEAD ANA	ALYST	r:	J. I	DUVAL					. 4	- 7	17/17/17		
ASSESSMI	ENT:												
	I	rical FLIGH OW/FU	T	R		NDANC'	Y SCR B		С		CII		
NASA IOA	[ 3	3 /3	]	[ N	A] A]	[ ]	NA] NA]	[ ]	NA] NA]		[	]	*
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LEAD ANA	LYS	ST:	:	J.	DUVA	L										
ASSESSME	NT	:														
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**REMARKS:** 

ASSESSMENT DATE: ASSESSMENT ID: NASA FMEA #:	1/08/87 HYDWSB-907 05-6G-2060-1		NASA DATA: BASELINE NEW	: [ X ]	
SUBSYSTEM: MDAC ID: ITEM:	HYD/WSB 907 CURRENT LIMITE	ER RESISTOR	(1.2K)		
LEAD ANALYST:	J. DUVAL		-	t sitt	
ASSESSMENT:					
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NASA [ 3 /3 IOA [ 3 /3	] [ NA] ] [ NA]		NA] NA]	[ ] *	k
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M	UBSYSTI IDAC ID: TEM:		HYD/WSE 907 CURRENT		(MITE	R F	RESISTO	)R	(1.2K)					-
I	EAD ANA	ALYST:	J. DUVA	L										
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		CRITICAL FLIGH HDW/FU	łΤ	RI A	EDUND	ANC	B SCRE	EENS	C C		CI	LEM	[	
	NASA IOA	[ 3 /3 [ 3 /3	] [	NZ NZ	A] A]	[	NA] NA]	[	NA] NA]		]		]	*
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ASSESSMENT DATE: ASSESSMENT ID: NASA FMEA #:	1/08/87 HYDWSB-908 05-6G-2059-1		NASA DATA BASELINE NEW	[ ]
SUBSYSTEM: MDAC ID: ITEM:	HYD/WSB 908 GSE ISOLATION	N DIODE	<del></del> -	-
LEAD ANALYST:	J. DUVAL			
ASSESSMENT:				
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COMPARE [ /	] [ ]	[ ]	[ ]	[ ]
RECOMMENDATIONS:	(If differe	ent from NAS	SA)	
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* CIL RETENTION REMARKS:	RATIONALE: (I	f applicable	≥) ADEQUATE INADEQUATE	[ ]

ASSESSMENT DATE: 1/08/87 ASSESSMENT ID: HYDWSB-909 NASA FMEA #: 05-6G-2058-1														ASA BAS	ELI		[	x	].	
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ASSESSMEN ASSESSMEN NASA FME	NT I	D:	1/08/8 HYDWS1 05-6G-	B-91					NASA DAT BASELIN NE	
SUBSYSTEM MDAC ID: ITEM:	M:		HYD/WS 910 VEHICI		SOLAT	ION I	DIODE			
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REMARKS:										

ASSESSMENT DATE: ASSESSMENT ID:	1/08/87 HYDWSB-911	NASA DATA: BASELINE	r 1
	05-6G-2055-3	NEW	[x]
SUBSYSTEM: MDAC ID: ITEM:	HYD/WSB 911 LG HYDRAULIC ISOLATIO	ON VLV SW	
LEAD ANALYST:	J. DUVAL		
ASSESSMENT:			
CRITICAL: FLIGHT	r	]	CIL ITEM
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NASA [ 2 /1R IOA [ 2 /1R	] [ P ] [ P ] ] [ P ]	[ P ] [ P ]	[ X ] * [ X ]
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RECOMMENDATIONS:	(If different from	NASA)	
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* CIL RETENTION I	RATIONALE: (If applica	able) ADEQUATE [ INADEQUATE	[ X ]

REMARKS:

ASSESSMENT DATE: ASSESSMENT ID: NASA FMEA #:	1/08/87 HYDWSB-912 05-6G-2055		NASA DATA BASELINE NEW	: [ x ]		
SUBSYSTEM: MDAC ID: ITEM:	HŸD/WSB 912 LG HYDRAUI	IC ISOLATION	VLV SW			
LEAD ANALYST:	J. DUVAL		Section 1995 and 1995 and 1995 and 1995 and 1995 and 1995 and 1995 and 1995 and 1995 and 1995 and 1995 and 1995 and 1995 and 1995 and 1995 and 1995 and 1995 and 1995 and 1995 and 1995 and 1995 and 1995 and 1995 and 1995 and 1995 and 1995 and 1995 and 1995 and 1995 and 1995 and 1995 and 1995 and 1995 and 1995 and 1995 and 1995 and 1995 and 1995 and 1995 and 1995 and 1995 and 1995 and 1995 and 1995 and 1995 and 1995 and 1995 and 1995 and 1995 and 1995 and 1995 and 1995 and 1995 and 1995 and 1995 and 1995 and 1995 and 1995 and 1995 and 1995 and 1995 and 1995 and 1995 and 1995 and 1995 and 1995 and 1995 and 1995 and 1995 and 1995 and 1995 and 1995 and 1995 and 1995 and 1995 and 1995 and 1995 and 1995 and 1995 and 1995 and 1995 and 1995 and 1995 and 1995 and 1995 and 1995 and 1995 and 1995 and 1995 and 1995 and 1995 and 1995 and 1995 and 1995 and 1995 and 1995 and 1995 and 1995 and 1995 and 1995 and 1995 and 1995 and 1995 and 1995 and 1995 and 1995 and 1995 and 1995 and 1995 and 1995 and 1995 and 1995 and 1995 and 1995 and 1995 and 1995 and 1995 and 1995 and 1995 and 1995 and 1995 and 1995 and 1995 and 1995 and 1995 and 1995 and 1995 and 1995 and 1995 and 1995 and 1995 and 1995 and 1995 and 1995 and 1995 and 1995 and 1995 and 1995 and 1995 and 1995 and 1995 and 1995 and 1995 and 1995 and 1995 and 1995 and 1995 and 1995 and 1995 and 1995 and 1995 and 1995 and 1995 and 1995 and 1995 and 1995 and 1995 and 1995 and 1995 and 1995 and 1995 and 1995 and 1995 and 1995 and 1995 and 1995 and 1995 and 1995 and 1995 and 1995 and 1995 and 1995 and 1995 and 1995 and 1995 and 1995 and 1995 and 1995 and 1995 and 1995 and 1995 and 1995 and 1995 and 1995 and 1995 and 1995 and 1995 and 1995 and 1995 and 1995 and 1995 and 1995 and 1995 and 1995 and 1995 and 1995 and 1995 and 1995 and 1995 and 1995 and 1995 and 1995 and 1995 and 1995 and 1995 and 1995 and 1995 and 1995 and 1995 and 1995 and 1995 and 1995 and 1995 and 1995 and 1995 and 1995 and 1995 and 1995 and 1995 and 1995 and 1995 and 1995 and 1995 and 1995 and 1995 and 1995 and 1995			
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RECOMMENDATIONS:	(If diff	erent from NA	SA)			
[ /	] [	] [ NA]	[ ] (A	[ ] DD/DELETE)		
* CIL RETENTION I	RATIONALE:	(If applicabl	e) ADEQUATE INADEQUATE	[ X ]		
REMARKS: SCREEN B NOT APP	LICABLE FOR	R STANDBY REDU	NDANCY.			

ASSESSMENT DATE: ASSESSMENT ID: NASA FMEA #:			NASA DATA: BASELINE NEW	[ ]
SUBSYSTEM: MDAC ID: ITEM:	HYD/WSB 913 LG HYDRAUL	IC ISOLATION V	LV SW	
LEAD ANALYST:	J. DUVAL			
ASSESSMENT:				
CRITICAL FLIGH		DUNDANCY SCREE	NS	CIL ITEM
HDW/FU		В	C	
NASA [ 3 /1R IOA [ 3 /3		] [ NA] ] [ NA]	[ P ] [ P ]	[ ] *
COMPARE [ /N	) (	] [ ]	[ ]	[ ]
RECOMMENDATIONS:	(If diffe	erent from NAS	A)	
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* CIL RETENTION REMARKS:			) ADEQUATE INADEQUATE	
IOA CONCURS WITH	NASA CRITIC	CALITY.		

ASSESSMENT ASSESSMENT NASA FMEA	ID:	1/08/8 HYDWSE 05-6G-	-914					ASA DA BASELI N			X.	]	
SUBSYSTEM: MDAC ID: ITEM:		HYD/WS 914 ISO VI		L CIF	cui'		STOI		1K)		****	w	-2
LEAD ANALYS	ST:	J. DUV	'AL										
ASSESSMENT:													
CRITICALITY			RE	REDUNDANCY SCREE			ENS			CI:			
I	FLIGHT HDW/FUI		A		В		С				LJ11		
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COMPARE [	N /	]	[	]	[	]	[	]		[ ]	N	]	
RECOMMENDA!	rions:	(If	diff	erent	fr	om NAS	SA)						
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* CIL RETER						icable	Al	DEQUAT DEQUAT		[		]	
IOA CONCURS	S WITH	NASA C	RITI	CALI	Y.								

ASSESSMENT DATE: ASSESSMENT ID: NASA FMEA #:	2/08/88 HYDWSB-1171X 06-3A-0633-1	NASA DATA BASELINE NEW					
SUBSYSTEM: MDAC ID: ITEM:	HYD/WSB 1171 BLOW-OFF STEAM VE	ENT PLUG					
LEAD ANALYST:	J. DUVAL						
ASSESSMENT:							
CRITICAL: FLIGH	Г	CIL ITEM					
HDW/FUI	NC A	ВС					
NASA [ 2 /1R IOA [ 2 /1R		P ] [ P ] P ] [ P ]	[ X ] * ·				
COMPARE [ /	] [ ] [	] [ ]	[ ]				
RECOMMENDATIONS:	(If different f	from NASA)					
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* CIL RETENTION RATIONALE: (If applicable)  ADEQUATE [ X ]  INADEQUATE [ ]							
	e". Change "Cause	33-1 TO "RESTRICTED ES" TO "STUCK OR IN					

ASSESSMENT DATE ASSESSMENT ID: NASA FMEA #:	: 1/08/87 HYDWSB-1 06-3A-06			NASA DAT BASELIN NE	
SUBSYSTEM: MDAC ID: ITEM:	HYD/WSB 1441 GN2 REGU	LATOR V	/ALVE		
LEAD ANALYST:	W. DAVID	SON			
ASSESSMENT:					
CRITICA FLIG HDW/F	HT	REDUND <i>A</i> A	NCY SCRE	C C	CIL ITEM
NASA [ 2 /1 IOA [ 2 /1	R ] [	P ] P ]	[ P ] [ P ]	[ P ]	[ X ] * [ X ]
COMPARE [ /	] [	]	[ ]	[ ]	[ ]
RECOMMENDATIONS	: (If di	fferent	from NA	SA)	
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* CIL RETENTION	RATIONALE	: (If a	applicabl	.e) ADEQUATE INADEQUATE	
REMARKS:					

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SUBSYSTI MDAC ID ITEM:			HYD, 175: CB	/WSB 1	٠								
LEAD AN	ALYST	:	W. I	DAVID	SON								
ASSESSM	ENT:												
	_	ICAL LIGH W/FU	T		REDUN A	IDAN	CY S B	CREEN	s c		CII		
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* CIL R	ETENT	ION	RATI(	ONALE	: (If	ap <sub>l</sub>	plic		ADEQ NADEO		[	]	

**REMARKS:** 

ASSESSMENT DATE: ASSESSMENT ID: NASA FMEA #:	1/27/88 HYDWSB-1761X 05-6WA-2129-		NASA DATA BASELINE NEW	
MDAC ID:	HYD/WSB 1761 BY-PASS RELA	Y		
LEAD ANALYST:	W. DAVIDSON	EPA . Tokada E.	s court appears to	
ASSESSMENT:				
CRITICAL: FLIGHT HDW/FUI	r	NDANCY SCREE	ens C	CIL
NASA [ 2 /1R IOA [ 2 /1R	] [ P ] ] [ P ]	[ P ] [ P ]	[ P ] [ P ]	[ X ] *
COMPARE [ /	] [ ]	[ ]	[ ]	[ ]
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ASSESSMENT DAY ASSESSMENT ID NASA FMEA #:	HYDWSB-	-1771X	1	NASA DATA: BASELINE NEW			
SUBSYSTEM: MDAC ID: ITEM:	HYD/WSE 1771 BOILER						
LEAD ANALYST:	W. DAVI	IDSON		. "			
ASSESSMENT:							
CRITICALITY				CIL			
	IGHT FUNC	A	В	С			
	/1R ] [ /1R ] [	[ P ] [	NA] [ NA] [	P ] P ]	[ X ] *		
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RECOMMENDATIO	NS: (If o	different	from NASA)				
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* CIL RETENTI	* CIL RETENTION RATIONALE: (If applicable)  ADEQUATE [ ]  INADEQUATE [ X ]						

	NT DATE: NT ID: A #:	HYDWS	1/27/88 HYDWSB-1791X 05-6W-2054-3			NASA DATA: BASELINE [ ] NEW [ X ]					]
SUBSYSTE MDAC ID:		HYD/W 1791 BOILE		NTRO	L SW						
LEAD ANA	LYST:	W. DA	VIDS	ON							
ASSESSME	NT:										
	CRITICAL FLIGH HDW/FU	T	R A			y scr B		С		CIL	
NASA IOA	[ 3 /3 [ 3 /1R	]	и ]	A]	[ ] [ ]	NA] NA]	] [	NA] NA]		[	] *
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	TENTION	RATION	ALE:	(If	app:	licab		ADEQU ADEQU		[	]
REMARKS:											

ASSESSMENT DATE: ASSESSMENT ID: NASA FMEA #:		NASA DATA BASELINE NEW	
SUBSYSTEM: MDAC ID: ITEM:	HYD/WSB 1832 CONTROL BUS RESISTORS	S, WSB CNTRLR F	WR HTR SW
LEAD ANALYST:	W. DAVIDSON		
ASSESSMENT:			
CRITICAL: FLIGHT HDW/FUI	T	CREENS C	CIL ITEM
NASA [ 3 /3 IOA [ 3 /3	] [ ] [ ] ] [ NA] [ NA]	[ ] [ AA ]	[ ] *
COMPARE [ /	] [и] [и]	[ N ]	[ ]
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* CIL RETENTION DE REMARKS:	RATIONALE: (If applica	able) ADEQUATE INADEQUATE	[ ]

ASSESSMENT DATE: ASSESSMENT ID: NASA FMEA #:	1/27/88 HYDWSB-1834X 05-6W-2086-1D	NASA DATA: BASELINE [ ] NEW [ X ]
	HYD/WSB 1834 CONTROL BUS RESISTORS, W	SB N2 SUPPLY SWITCH
LEAD ANALYST:	W. DAVIDSON	
ASSESSMENT:		
CRITICALI FLIGHT HDW/FUN		NS CIL ITEM C
NASA [ 3 /3 IOA [ 3 /3	] [ ] [ ] ] [ NA] [ NA]	[ ] * [ ] * [ NA]
COMPARE [ /	] [N] [N]	[ N ] [ ]
RECOMMENDATIONS:	(If different from NAS	SA)
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* CIL RETENTION F	RATIONALE: (If applicable	ADEQUATE [ ] INADEQUATE [ ]

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SUBSYSTEM: HYD/WSB MDAC ID: 1841 ITEM: SWITCH, "APU/HYD BOILER N2 SUPPLY"																			
LEAD ANA	LYS	T:		w.	DAV	VI!	DS	ИС											
ASSESSME	NT:																		
	CRI		CALI IGHI		•		R	EDUN	DA	NCY	sc	REE	15				IL FEI	м	
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NASA IOA	[	2 / 2 /	/1R /1R	]		[	P P	]		[ P [ P	]	 	[ P	]		[	X X	]	*
COMPARE	[	/	/	]		[		]		(	]			]		[		]	
RECOMMEN	DAT	101	NS:		(If	d:	i.f:	fere	nt	fr	om	NAS	<b>A</b> )						
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<b>REMARKS:</b>																-		-	

SUBSYSTEM: HYD/WSB MDAC ID: 1862	
ITEM: HYBRID DRIVER CIRCUIT	
LEAD ANALYST: W. DAVIDSON	
ASSESSMENT:	
CRITICALITY REDUNDANCY SCREENS CIL FLIGHT ITEM HDW/FUNC A B C	
NASA [3/1R] [P] [P] [P] [] [INA] [P] [INA] [P]	*
COMPARE [ / ] [ ] [ N ] [ ]	
RECOMMENDATIONS: (If different from NASA)	
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* CIL RETENTION RATIONALE: (If applicable)  ADEQUATE [ ]  REMARKS:	

ASSESSMENT DAT ASSESSMENT ID: NASA FMEA #:		-1865X		NASA DAT BASELIN NE		
SUBSYSTEM: MDAC ID: ITEM:	HYD/WS 1865 HDC TY		D BOILER	ON CMD		
LEAD ANALYST:	W. DAV	IDSON				•
ASSESSMENT:						
CRITIC. FLI	HT		ANCY SCR		CII	
HDW/	TUNC	A	В	С		
NASA [ 3 / IOA [ 3 /	]	[ ] [ NA]	[ ] [ NA]	[ AN ]	[	] <b>*</b>
COMPARE [ /	]	[и]	[ N ]	[ N ]	[	]
RECOMMENDATION	: (If	differen	t from N	ASA)		
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* CIL RETENTION	RATIONA	LE: (If	applicab:	le) ADEQUATE INADEQUATE		]
REMARKS:					L	ı

ASSESSME ASSESSME NASA FME	NT ID:	HYDW	/88 SB-1901X W-2259A-1		NASA DATA BASELINE NEW		_
SUBSYSTE MDAC ID: ITEM:	M:	HYD/ 1901 DIOD		ISOL, 12	A, WSB CNTRLR	PWR	CKTRY
LEAD ANA	LYST:	W. D	AVIDSON				
ASSESSME	NT:						
	CRITICAL FLIGH	IT		ANCY SCRE	EENS C	CIL	
	HDW/F	JNC	A	В	C		
NASA IOA	[ 3 /3 [ 3 /3	]	[ P ] [ NA]	[ NA]	[ P ] [ NA]	[	] * ]
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REMARKS:							

ASSESSMENT DAT ASSESSMENT ID: NASA FMEA #:	HYDWSB-5000X		IASA DATA: BASELINE [ ] NEW [ X ]
SUBSYSTEM: MDAC ID: ITEM: LINE	HYD/WSB 5000 VALVE, CHECK,	, L.G. HYD. CKT	. FUSELAGE RETURN
LEAD ANALYST:	W. DAVIDSON		
ASSESSMENT:			
FLI		NDANCY SCREENS B C	CIL ITEM
NASA [ 1 / IOA [ 1 /	1 ] [ NA] 1 ] [ NA]	[ NA] [ N [ NA] [ N	[ X ] * [ X ]
COMPARE [ /	] [ ]	[ ] [	1. [ ]
RECOMMENDATION	S: (If differe	ent from NASA)	
[ /	] [ ]	] [ ]	] [ ] (ADD/DELETE)
* CIL RETENTION REMARKS:	N RATIONALE: (I1	A	ADEQUATE [ X ] ADEQUATE [ ]

ASSESSMENT DATE: ASSESSMENT ID: NASA FMEA #:	HYDWSB-5001X		NE [ ] EW [ X ]
	HYD/WSB 5001 VALVE, CHECK,	L.G. HYD. CKT. FUSE	LAGE RETURN
LEAD ANALYST:	W. DAVIDSON		
ASSESSMENT:			
CRITICAL FLIGH HDW/FU	T	DANCY SCREENS  B C	CIL ITEM
NASA [ 3 /1R IOA [ 3 /2R	] [ F ] .	[ NA] [ P ] [ NA] [ P ]	[ X ] * [ X ]
COMPARE [ /N	] [ ]	[ ] [ ].	[ ]
RECOMMENDATIONS:	(If differe	nt from NASA)	
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* CIL RETENTION DE REMARKS:	RATIONALE: (If	applicable) ADEQUAT INADEQUAT	
	ATES 3/2R AS A	PPROPRIATE CRITICALI	TY.

ASSESSMI ASSESSMI NASA FMI	ENT	ID	:	HY	28/8 DWS1 -6G-	3-8							NASA BASI	ELIN		x	]		
SUBSYSTI MDAC ID: ITEM: VLV SOL	:			80	D/WS 001 ODE		UR	RGE	SUP	PR.	. (3	AMP	) НУІ	MM C	PUI	ΝP	DE	PRES	s
LEAD AND	ALYS	ST:		W.	DAV	/ID	SC	N											
ASSESSMI	ENT	:																	
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RECOMMEN	VDA:	rio:	NS:		(If	di	.ff	ere	ent :	fro	om N	ASA)	•						
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ASSESSMENT DATE: ASSESSMENT ID: NASA FMEA #:	HYDWSB-8002X		
	HYD/WSB 8002 DIODE, ISOL, HYD	MN PMP DEPRESS V	ALVE SOLENOIE
LEAD ANALYST:	P. BYNUM		
ASSESSMENT:			
CRITICALI FLIGHT HDW/FUN		CY SCREENS B C	CIL ITEM
	] [P] [ ] [P] [	F ] [ P ] F ] [ P ]	[ X ] * [ X ]
COMPARE [ /	] [ ] [	] [ ]	[ ]
RECOMMENDATIONS:	(If different	from NASA)	
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* CIL RETENTION F	RATIONALE: (If app	plicable) ADEQUAT INADEQUAT	

ASSESSMI ASSESSMI NASA FMI	ENT II		1/28/ HYDWS 05-60	B-8				N	BASE	DATA: LINE NEW		x ]	
SUBSYSTI MDAC ID: ITEM: SOLENOII			HYD/W 8003 DIODE		SOL (	(3A),	HYD	MN PM	IP DE	PRESS	V:	LV	
LEAD AND	LYST	:	P. BY	NUM									
ASSESSMI	ENT:												
·		ICAL: LIGH' W/FU	r		REDUN A		Y SCR	EENS			CI: IT:	L EM	
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* CIL RI		ION	RATION	VALE	: (If	app	licab	P	ADEQUA		[	x ]	

ASSESSMENT DATE: ASSESSMENT ID: NASA FMEA #:	1/28/88 HYDWSB-8004X 05-6G-2095-2		NASA DATA: BASELINE NEW	
	HYD/WSB 8004 HYBRID DRIVER	TYPE 4, HYD	L.G. RETR/	CIRC VLV
LEAD ANALYST:	P. BYNUM			
ASSESSMENT:				-
CRITICALI FLIGHT HDW/FUN	<b>r</b>	DANCY SCREENS	c	CIL ITEM
·	] [ P ]	[F] [:	P ] P ]	[ X ] *
COMPARE [ /	] [ ]	ן ניין	]	[ ]
RECOMMENDATIONS:	(If differer	nt from NASA)		
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* CIL RETENTION F	RATIONALE: (If		ADEQUATE ADEQUATE	[ x ]

ASSESSMENT DATE: ASSESSMENT ID: NASA FMEA #:	2/10/88 HYDWSB-8005X 05-6G-00100-1B	DWSB-8005X BASELINE [ X					
SUBSYSTEM: MDAC ID: ITEM:	HYD/WSB 8005 DIODE, HYD MN PUMP	DEPRESS VLV SOL CKT.					
LEAD ANALYST: P. BYNUM							
ASSESSMENT:							
CRITICAI FLIGH	LITY REDUNDANCY	SCREENS	CIL. ITEM				
HDW/FU		С					
NASA [ 2 /1F IOA [ 2 /1F	[ F ] [ F ] [ F ]	] [ P ] ] [ P ]	[ X ] *				
COMPARE [ /	] [ ] [	] [ ]	[ ]				
RECOMMENDATIONS:	(If different fr	om NASA)					
[ /	] [ ] [	] [ ] (A)	[ ] DD/DELETE)				
* CIL RETENTION RATIONALE: (If applicable)  ADEQUATE [ X ] INADEQUATE [ ]							
REMARKS: THIS PRE 51-L FMEA/CIL. ITEM NOT REFLECTED AS POST 51-L CIL ITEM IN THE PRE CCB CIL WAIVER PACKAGE (8 DECEMBER 1987). IOA RECOMMENDS THIS AS A CIL ITEM.							

ASSESSMENT DATE: ASSESSMENT ID: NASA FMEA #:	2/13/88 HYDWSB-816 05-6G-2004		NASA DAT BASELIN NI	
SUBSYSTEM: MDAC ID: ITEM:	HYD/WSB 8161 CONTROL FU	SE (3A) HYI	CIRC PUMP CN	VTRL
LEAD ANALYST:	W. DAVIDSO	N		
ASSESSMENT:				
CRITICAL FLIGH	r	DUNDANCY SO	CREENS .	CIL ITEM
HDW/FU	NC A	. <b>.</b>		
NASA [ 3 /1R IOA [ 3 /1R		] [ P ]	[ P ] [ P ]	[ ] *
COMPARE [ /	] [	] [ ]	[ ]	[ ]
RECOMMENDATIONS:	(If diff	erent from	NASA)	
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* CIL RETENTION	RATIONALE:	(If applica	able) ADEQUATI INADEQUATI	•
REMARKS:			THEDDQUAL	- L J

ASSESSMENT DATE ASSESSMENT ID: NASA FMEA #:	: 2/13/88 HYDWSB-8 05-6G-20	3162X 00400-1NB		NASA DATA: BASELINE NEW		•
SUBSYSTEM: MDAC ID: ITEM:	HYD/WSB 8162 POWER FU	JSE (150 AM	P), H40	CIRC PUMP	CNTI	i.
LEAD ANALYST:	W. DAVII	OSON				
ASSESSMENT:			-			
CRITICA FLIC		REDUNDANCY	SCREENS		CIL	т
	UNC	A B	3	С		•
NASA [ 3 /3 IOA [ 3 /3	R ] [	P ] [ P NA] [ N	[A] [	P ] NA]	[	] <b>*</b> ]
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RECOMMENDATIONS	: (If d	ifferent fr	om NASA)			
[ 3 /3	] [	NA] [ N	(A) [	NA]	[ DD/DE	] ELETE)
* CIL RETENTION	RATIONAL	E: (If appl	·	ADEQUATE ADEQUATE	[	]
REMARKS: THE FUNCTION OF LOSS OF ALL REPLOSS OF ONE CITOR WILL IT RES	UNDANCY MI C PUMP WII	EANS LOSS O LL NOT RESU	VIDE POW F POWER LT IN LO	ER TO ONE TO ONE CIP SS OF LIFE	CIRC RC PU E OR	MP.

PUMP IS CRITICALITY 3/3.

ASSESSME ASSESSME NASA FME	NT	II		HY	/08/8 /DWS1 5-6G-	3-8				3	-					DAT ELIN NE	E	[		]	
SUBSYSTEM MDAC ID:	M:			84	D/WS 61 VR SV		525	5					र्वे - रेन्स	- % - :	: 2 : .						
LEAD ANA	LYS	T	:	J.	יטם	/ <b>A</b> :	L														
ASSESSME	NT:	1																			
,	CRI		ICAL: LIGH		Z.		RI	EDUI	NDA	NC	Y	SCI	REEN	S				CI		ĺ	
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SUBSYSTE MDAC ID:				84	D/WS 62 TR SV		525	5												
LEAD ANA	LY	ST	:	J.	יטם	/A]	L													
ASSESSME	ENT	:																		
	CR		ICAL:		?	-	RI	EDUN	D <b>A</b> I	NC		SCR	REEN					CIL ITE		
		HD	W/FUI	NC.			A				В			С						
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REMARKS:

ASSESSMENT DATE: ASSESSMENT ID: NASA FMEA #:		ıc	NASA DATA BASELINE NEW	-	]
	HYD/WSB 8751 FUSE, (1A) LG	RETRACT/CIF	C VLV SOLE	NOID	
LEAD ANALYST:	P. BYNUM				
ASSESSMENT:					
CRITICAL: FLIGHT HDW/FU	T	DANCY SCREEN B	rs C	CIL	1
NASA [ 3 /3 IOA [ 3 /3	] [ NA] ] [ NA]	[ NA] [ [ NA] [	NA]	[	] <b>*</b>
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ASSESSMENT DATE: ASSESSMENT ID: NASA FMEA #:	2/13/88 HYDWSB-8752X 05-6G-200300-1D	NASA DATA BASELINE NEW	
SUBSYSTEM: MDAC ID: ITEM: CKT	HYD/WSB 8752 RESISTOR, (1.21K),	LG RETRACT/CIRC	VLV SOLENOID
LEAD ANALYST:	P. BYNUM		ž
ASSESSMENT:			
CRITICAL FLIGH HDW/FU	T	SCREENS C	CIL ITEM
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SUBSYSTE MDAC ID: ITEM:			HYD/W 8761 DIODE		RPC I	PWR IS	OLAT	'ION',	(2A)	(12A	)	
LEAD ANA	LYST	<b>':</b>	P. BY	MUM								
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SUBSYST MDAC ID ITEM: (2A)(15	:			87	D/WS 62 ODE,		ROUND	IS	OL	ATIO	Ν,	RET	TRAC	T/CI	R VI	Z <b>V,</b>	
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SUBSYSTEM: MDAC ID: ITEM:	HYD/WSB 8763 DIODE, C	GROUND IS	SOLATION	, (15A)			
LEAD ANALYST:	P. BYNUN	м					
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FLI	ALITY GHT FUNC	REDUNDA!	B	ens C	CIL ITEM		
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**REMARKS:** 

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SUBSYSTE MDAC ID: ITEM:			HYD, 8764 RESI	1	, MON	IITOR I	SOLAT:	ION, (1.	8K) (2.	2K) (	5.1K)
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SUBSYSTEM MDAC ID:	M:	HYD/ 8765 RESI		ORT CKT PR	OTECTION	
LEAD ANA	LYST:	P. B	YNUM			
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ASSESSME	NT:										
(		ICAL LIGH	ITY		REDUN	DANCY	SCRE	ENS	3	CIL	
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SUBSYSTI MDAC ID: ITEM:		9	YD/WS 091 IDM IS		NOI	DIO	DE						
LEAD AN	ALYST:	W	. DAV	IDSC	N								
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r	ENS C	CIL ITEM
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	SUBSYSTI MDAC ID: ITEM:		914		CTL C	rcu	IT RE	SIST	OR (1.21	LK)	•
	LEAD ANA	ALYST:	<b>W.</b> 1	DAVID	SON						
	ASSESSME	ENT:									
		CRITIC		:	REDUN	DANC	Y SCR	EENS		CII	
FLIGH HDW/FU			FUNC		A		В		С	ITE	.M
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**REMARKS:** 

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SUBSYSTEM: MDAC ID: ITEM:	HYD/WSB 9501 HYDRAULIC PRES	SURE METER			
LEAD ANALYST:	W. DAVIDSON				
ASSESSMENT:					
CRITICAL: FLIGHT HDW/FUI	T	ANCY SCREEN B	vs C	CIL	I
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APPENDIX D

CRITICAL ITEMS

# APPENDIX D POTENTIAL CRITICAL ITEMS

06-3A-0602-1 101 WATER SPRAY BOILER EXTERNAL LEAKAGE 06-3A-0618-1 102 WATER SPRAY BOILER EXTERNAL LEAKAGE 06-3A-0618-1 103 LINES AND FITTINGS LEAKAGE 06-3A-0619-1 103 LINES AND FITTINGS LEAKAGE 06-3A-0603-4 104 HEAT EXCHANGER ASSY RESTRICTED FLOW 06-3A-0602-3 105 HEAT EXCHANGER ASSY RESTRICTED FLOW 06-3A-0602-4 105 HEAT EXCHANGER ASSY EXTERNAL LEAKAGE 06-3A-0602-4 105 HEAT EXCHANGER ASSY EXTERNAL LEAKAGE 06-3A-0603-5 106 HEAT EXCHANGER ASSY CORE LEAKAGE 06-3A-0603-2 106 HEAT EXCHANGER ASSY CORE LEAKAGE 06-3A-0603-2 106 HEAT EXCHANGER ASSY CORE LEAKAGE 06-3A-0603-5 107 HEAT EXCHANGER ASSY HEADER LEAKAGE 06-3A-0603-1 107 HEAT EXCHANGER ASSY HEADER LEAKAGE 06-3A-0605-2 108 SPRAY VALVE FAILS TO CLOSE 06-3A-0605-3 109 SPRAY VALVE FAILS TO CLOSE 06-3A-0605-3 109 SPRAY VALVE FAILS TO CLOSE 06-3A-0605-3 109 SPRAY VALVE FAILS TO CLOSE 06-3A-0605-3 109 SPRAY VALVE FAILS TO CLOSE 06-3A-0616-3 126 LUBE OIL DRAIN EXTERNAL LEAKAGE 06-3A-0616-3 126 LUBE OIL DRAIN EXTERNAL LEAKAGE 06-3A-0616-2 126 LUBE OIL DRAIN EXTERNAL LEAKAGE 06-3A-0608-1 134 WATER TANK LEAKAGE HZO EXT 06-3A-0608-1 134 WATER TANK LEAKAGE GOZ INT 06-3A-0608-1 134 WATER TANK LEAKAGE GOZ INT 06-3A-0608-1 134 WATER TANK LEAKAGE GOZ INT 06-3A-0608-1 142 GNZ TANK LEAKAGE GOZ INT 06-3A-0609-1 142 GNZ TANK LEAKAGE 06-3A-0613-3 136 WATER TANK FILL EXTERNAL LEAKAGE 06-3A-0613-3 136 WATER TANK FILL EXTERNAL LEAKAGE 06-3A-0613-3 136 WATER TANK FILL EXTERNAL LEAKAGE 06-3A-0613-3 136 WATER TANK LEAKAGE GOZ INT 06-3A-0609-1 142 GNZ TANK LEAKAGE 06-3A-0613-3 136 WATER TANK LEAKAGE 06-3A-0613-3 136 WATER TANK LEAKAGE 06-3A-0613-3 136 WATER TANK LEAKAGE 06-3A-0613-3 136 WATER TANK FILL EXTERNAL LEAKAGE 06-3A-0613-3 136 WATER TANK FILL EXTERNAL LEAKAGE 06-3A-0610-1 145 GNZ SHUTOFF VALVE FAILS TO OPEN 143 GNZ TANK LEAKAGE 06-3A-0613-3 154 GNZ SHUTOFF VALVE FAILS TO OPEN 16-3A-0613-3 155 GNZ SHUTOFF VALVE FAILS TO OPEN 16-3A-0613-3 154 GNZ SHUTOFF VALVE FAILS TO OPEN 16-3A-0614-2 154 GNZ VENT DISCONNECT EXTERNAL LEAKAGE 16-3A-0610-1 167 HYDRAULIC BYPASS VALV 16-3A-0610-1 167 HY	NASA FMEA	MDAC-ID	ITEM	FAILURE MODE
06-3A-0618-1 102 WATER SPRAY BOILER				
06-3A-0618-1 102 WATER SPRAY BOILER	06 01 0600 1	101	MAMED CDDAY BOTTED	PESTRICTED FLOW
06-3A-0618-1 103 LINES AND FITTINGS LEAKAGE   06-3A-0603-4 104 HEAT EXCHANGER ASSY RESTRICTED FLOW   06-3A-0602-3 105 HEAT EXCHANGER ASSY RESTRICTED FLOW   06-3A-0602-3 105 HEAT EXCHANGER ASSY RESTRICTED FLOW   06-3A-0602-3 105 HEAT EXCHANGER ASSY RESTRICTED FLOW   06-3A-0602-3 105 HEAT EXCHANGER ASSY RESTRICTED FLOW   06-3A-0603-2 106 HEAT EXCHANGER ASSY CORE LEAKAGE   06-3A-0603-2 106 HEAT EXCHANGER ASSY CORE LEAKAGE   06-3A-0603-5 106 HEAT EXCHANGER ASSY CORE LEAKAGE   06-3A-0603-5 106 HEAT EXCHANGER ASSY CORE LEAKAGE   06-3A-0603-1 107 HEAT EXCHANGER ASSY HEADER LEAKAGE   06-3A-0605-1 109 SPRAY VALVE FAILS TO OLOSE   06-3A-0605-1 109 SPRAY VALVE FAILS TO CLOSE   06-3A-0605-1 109 SPRAY VALVE FAILS TO CLOSE   06-3A-0605-1 118 HYDRAULIC/LUBE OIL   06-3A-0616-3 126 LUBE OIL DRAIN EXTERNAL LEAKAGE   06-3A-0616-2 126 LUBE OIL DRAIN EXTERNAL LEAKAGE   06-3A-0608-1 134 WATER TANK LEAKAGE - H2O EXT   06-3A-0608-1 134 WATER TANK LEAKAGE - M2 INT   06-3A-0608-1 134 WATER TANK LEAKAGE - M2 INT   06-3A-0613-2 136 WATER TANK FILL EXTERNAL LEAKAGE   06-3A-0613-3 136 WATER TANK FILL EXTERNAL LEAKAGE   06-3A-0613-1 145 GNZ TANK LEAKAGE   06-3A-0607-1 145 GNZ REGULATOR VALVE   06-3A-0607-1 145 GNZ REGULATOR VALVE   06-3A-0607-1 145 GNZ REGULATOR RELIEF   06-3A-0615-3 152 GNZ FILL DISCONNECT   06-3A-0615-3 152 GNZ FILL DISCONNECT   06-3A-0615-3 152 GNZ FILL DISCONNECT   06-3A-0616-2 154 GNZ SHUTOFF VALVE   06-3A-0616-3 154 GNZ SHUTOFF VALVE   06-3A-0610-1 167 HYDRAULIC BYPASS VALV   06-3A-0610-1 167 HYDRAULIC BYPASS VALV   06-3A-0610-3 170 HYDRAULIC BYPASS VALV   06-3A-0610-4 169 HYDRAULIC RELIEF VALVE   06-3A-0610-3 170 HYDRAULIC RELIEF VALVE   06-3A-0610-4 169 HYDRAULIC RELIEF VALVE   06-3A-0610-3 170 HYDRAULIC RELIEF VALVE   06-3A-0610-1 167 HYDRAULIC BYPASS VALV   06-3A-0610-1 167 HYDRAULIC BYPASS VALV   06-3A-0610-1 167 HYDRAULIC BYPASS VALV   06-3A-0610-1 167 HYDRAULIC BYPASS VALV   06-3A-0610-1 167 HYDRAULIC BYPASS VALV   06-3A-0610-1 167 HYDRAULIC BYPASS VALV   06-3A-0610-1 167 HYDRAULIC BYPASS VALV   06-3A-0610-1 167				
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06-3A-0603-2 106 HEAT EXCHANGER ASSY CORE LEAKAGE 06-3A-0603-5 106 HEAT EXCHANGER ASSY CORE LEAKAGE 06-3A-0603-1 107 HEAT EXCHANGER ASSY HEADER LEAKAGE 06-3A-0605-2 108 SPRAY VALVE FAILS TO OPEN 06-3A-0605-1 109 SPRAY VALVE FAILS TO CLOSE 06-3A-0605-3 109 SPRAY VALVE FAILS TO CLOSE 118 HYDRAULIC/LUBE OIL LOSS OF FLOW 06-3A-0616-3 126 LUBE OIL DRAIN EXTERNAL LEAKAGE 06-3A-0616-2 126 LUBE OIL DRAIN EXTERNAL LEAKAGE 06-3A-0608-3 133 WATER TANK LEAKAGE - H20 EXT 06-3A-0608-3 134 WATER TANK LEAKAGE - GN2 INT 06-3A-0608-2 134 WATER TANK LEAKAGE - GN2 INT 06-3A-0608-2 134 WATER TANK LEAKAGE - GN2 INT 06-3A-0613-2 136 WATER TANK FILL EXTERNAL LEAKAGE 06-3A-0613-3 136 WATER TANK FILL EXTERNAL LEAKAGE 06-3A-0609-1 142 GN2 TANK BURST 06-3A-0609-1 142 GN2 TANK BURST 06-3A-0607-1 145 GN2 REGULATOR VALVE FAILS TO CLOSE 06-3A-0607-3 146 GN2 REGULATOR RELIEF FAILS TO OPEN 06-3A-0607-3 146 GN2 REGULATOR RELIEF FAILS TO OPEN 06-3A-0606-1 148 GN2 SHUTOFF VALVE FAILS TO OPEN 06-3A-0606-1 148 GN2 SHUTOFF VALVE FAILS TO OPEN 06-3A-0606-1 148 GN2 SHUTOFF VALVE FAILS TO OPEN 06-3A-0615-3 152 GN2 FILL DISCONNECT EXTERNAL LEAKAGE 06-3A-0615-3 152 GN2 FILL DISCONNECT EXTERNAL LEAKAGE 06-3A-0614-3 154 GN2 VENT DISCONNECT LEAKAGE, EXTERNAL 06-3A-0610-1 167 HYDRAULIC BYPASS VALV 06-3A-0610-1 167 HYDRAULIC BYPASS VALV 06-3A-0610-1 167 HYDRAULIC BYPASS VALV 06-3A-0610-1 167 HYDRAULIC BYPASS VALV 06-3A-0610-3 170 HYDRAULIC BYPASS VALV 06-3A-0610-3 170 HYDRAULIC BYPASS VALV 06-3A-0610-3 170 HYDRAULIC BYPASS PELI OUT OF TOLERANCE 06-3A-0628-2 173 HYDRAULIC BYPASS/RELI OUT OF TOLERANCE 05-6WA-2051-1 178 BOILER CONTROL POWER FAILS TO CLOSE				
06-3A-0603-5 106 HEAT EXCHANGER ASSY CORE LEAKAGE 06-3A-0603-1 107 HEAT EXCHANGER ASSY HEADER LEAKAGE 106-3A-0605-2 108 SPRAY VALVE FAILS TO OPEN 108-3A-0605-1 109 SPRAY VALVE FAILS TO CLOSE 118 HYDRAULIC/LUBE OIL LOSS OF FLOW 118 HYDRAULIC/LUBE OIL LOSS OF FLOW 118 HYDRAULIC/LUBE OIL LOSS OF FLOW 118 HYDRAULIC/LUBE OIL DRAIN EXTERNAL LEAKAGE 106-3A-0616-2 126 LUBE OIL DRAIN EXTERNAL LEAKAGE 106-3A-0608-1 134 WATER TANK LEAKAGE - H20 EXT 106-3A-0608-1 134 WATER TANK LEAKAGE - GN2 INT 106-3A-0608-2 134 WATER TANK LEAKAGE - GN2 INT 106-3A-0608-2 134 WATER TANK FILL EXTERNAL LEAKAGE 106-3A-0613-3 136 WATER TANK FILL EXTERNAL LEAKAGE 106-3A-0609-1 142 GN2 TANK LEAKAGE 106-3A-0609-1 142 GN2 TANK LEAKAGE 106-3A-0607-4 144 GN2 REGULATOR VALVE FAILS TO CLOSE 106-3A-0607-1 145 GN2 REGULATOR VALVE FAILS TO OPEN 106-3A-0606-1 148 GN2 REGULATOR RELIEF FAILS TO OPEN 106-3A-0606-1 148 GN2 SHUTOFF VALVE FAILS TO OPEN 106-3A-0606-1 148 GN2 SHUTOFF VALVE FAILS TO OPEN 106-3A-0615-2 152 GN2 FILL DISCONNECT EXTERNAL LEAKAGE 106-3A-0615-2 152 GN2 FILL DISCONNECT EXTERNAL LEAKAGE 106-3A-0610-3 154 GN2 VENT DISCONNECT EXTERNAL LEAKAGE 106-3A-0610-1 167 HYDRAULIC BYPASS VALV 106-3A-0610-1 167 HYDRAULIC BYPASS VALV 106-3A-0610-1 167 HYDRAULIC RELIEF VALVE EXTERNAL LEAKAGE 106-3A-0610-1 167 HYDRAULIC RELIEF VALVE EXTERNAL LEAKAGE 106-3A-0610-2 169 HYDRAULIC RELIEF VALVE EXTERNAL LEAKAGE 106-3A-0610-3 170 HYDRAULIC BYPASS VALV 106-3A-0610-3 170 HYDRAULIC BYPASS VALV 106-3A-0610-3 170 HYDRAULIC BYPASS VALV 106-3A-0610-3 170 HYDRAULIC BYPASS VALV 106-3A-0610-3 170 HYDRAULIC BYPASS VALV 106-3A-0628-2 172 HYDRAULIC BYPASS RELI 100-0000000000000000000000000000000000				
06-3A-0603-1 107 HEAT EXCHANGER ASSY HEADER LEAKAGE   06-3A-0605-2 108 SPRAY VALVE FAILS TO OPEN   06-3A-0605-1 109 SPRAY VALVE FAILS TO CLOSE   118 HYDRAULIC/LUBE OIL LOSS OF FLOW   06-3A-0616-3 126 LUBE OIL DRAIN EXTERNAL LEAKAGE   06-3A-0616-2 126 LUBE OIL DRAIN EXTERNAL LEAKAGE   06-3A-0608-3 133 WATER TANK LEAKAGE - H20 EXT   06-3A-0608-1 134 WATER TANK LEAKAGE - GN2 INT   06-3A-0608-2 134 WATER TANK LEAKAGE - GN2 INT   06-3A-0613-2 136 WATER TANK LEAKAGE - GN2 INT   06-3A-0613-3 136 WATER TANK FILL EXTERNAL LEAKAGE   06-3A-0613-3 136 WATER TANK FILL EXTERNAL LEAKAGE   06-3A-0609-1 142 GN2 TANK BURST   143 GN2 TANK LEAKAGE   06-3A-0607-4 144 GN2 REGULATOR VALVE FAILS TO OPEN   06-3A-0607-3 146 GN2 REGULATOR RELIEF FAILS TO CLOSE   06-3A-0607-5 147 GN2 REGULATOR RELIEF FAILS TO OPEN   06-3A-0606-4 150 GN2 SHUTOFF VALVE FAILS TO OPEN   06-3A-0615-3 152 GN2 FILL DISCONNECT   06-3A-0615-3 152 GN2 FILL DISCONNECT   06-3A-0615-2 154 GN2 VENT DISCONNECT   06-3A-0614-2 154 GN2 VENT DISCONNECT   06-3A-0610-5 166 HYDRAULIC BYPASS VALV   06-3A-0610-1 167 HYDRAULIC BYPASS VALV   06-3A-0610-3 170 HYDRAULIC RELIEF VALVE   06-3A-0610-3 170 HYDRAULIC RELIEF VALVE   06-3A-0628-2 172 HYDRAULIC BYPASS/RELI   005-6WA-2051-1 178 BOILER CONTROL POWER   FAILS TO OPEN   FAILS TO CLOSE   FAILS TO CLOSE   FAILS TO CLOSE   FAILS TO CLOSE   FAILS TO CLOSE   FAILS TO CLOSE   FAILS TO CLOSE   FAILS TO CLOSE   FAILS TO CLOSE   FAILS TO CLOSE   FAILS TO CLOSE   FAILS TO CLOSE   FAILS TO CLOSE   FAILS TO CLOSE   FAILS TO CLOSE   FAILS TO CLOSE   FAILS TO CLOSE   FAILS TO CLOSE   FAILS TO CLOSE   FAILS TO CLOSE   FAILS TO CLOSE   FAILS TO CLOSE   FAILS TO CLOSE   FAILS TO CLOSE   FAILS TO CLOSE   FAILS TO CLOSE   FAILS TO CLOSE   FAILS TO CLOSE   FAILS TO CLOSE   FAILS TO CLOSE   FAILS TO CLOSE   FAILS TO CLOSE   FAILS TO CLOSE   FAILS TO CLOSE   FAILS TO CLOSE   FAILS TO CLOSE   FAILS TO CLOSE   FAILS TO CLOSE   FAILS TO CLOSE   FAILS TO CLOSE   FAILS TO CLOSE   FAILS TO CLOSE   FAILS TO CLOSE   FAILS TO CLOSE   FAILS TO CLOSE   FAILS TO				* * - :
06-3A-0605-2 108 SPRAY VALVE FAILS TO OPEN   06-3A-0605-1 109 SPRAY VALVE FAILS TO CLOSE   118 HYDRAULIC/LUBE OIL LOSS OF FLOW   06-3A-0616-3 126 LUBE OIL DRAIN EXTERNAL LEAKAGE   06-3A-0616-2 126 LUBE OIL DRAIN EXTERNAL LEAKAGE   06-3A-0608-3 133 WATER TANK LEAKAGE   06-3A-0608-1 134 WATER TANK LEAKAGE   06-3A-0608-1 134 WATER TANK LEAKAGE   06-3A-0613-2 136 WATER TANK LEAKAGE   06-3A-0613-2 136 WATER TANK FILL EXTERNAL LEAKAGE   06-3A-0613-3 136 WATER TANK FILL EXTERNAL LEAKAGE   06-3A-0609-1 142 GN2 TANK BURST   143 GN2 TANK BURST   144 GN2 REGULATOR VALVE FAILS TO OPEN   06-3A-0607-4 144 GN2 REGULATOR VALVE FAILS TO CLOSE   06-3A-0607-5 147 GN2 REGULATOR VALVE FAILS TO OPEN   06-3A-0606-1 148 GN2 SHUTOFF VALVE FAILS TO OPEN   06-3A-0606-1 148 GN2 SHUTOFF VALVE FAILS TO OPEN   06-3A-0615-3 152 GN2 FILL DISCONNECT   06-3A-0615-2 152 GN2 FILL DISCONNECT   06-3A-0614-3 154 GN2 VENT DISCONNECT   06-3A-0614-3 154 GN2 VENT DISCONNECT   06-3A-0610-1 167 HYDRAULIC BYPASS VALV   06-3A-0610-1 167 HYDRAULIC BYPASS VALV   06-3A-0610-3 170 HYDRAULIC BYPASS VALV   06-3A-0628-2 172 HYDRAULIC BYPASS /RELI   06-3C08A-2051-1 177 BOILER CONTROL POWER FAILS TO CLOSE   07-0C-0C-0C-0C-0C-0C-0C-0C-0C-0C-0C-0C-0C-				
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109   SPRAY VALVE			CDDAV WATWE	
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126	06-3A-0605+3			
06-3A-0616-2 126 LUBE OIL DRAIN EXTERNAL LEAKAGE 06-3A-0608-3 133 WATER TANK LEAKAGE - H2O EXT 06-3A-0608-1 134 WATER TANK LEAKAGE - GN2 INT 06-3A-0608-2 134 WATER TANK LEAKAGE - GN2 INT 06-3A-0613-2 136 WATER TANK FILL EXTERNAL LEAKAGE 06-3A-0613-3 136 WATER TANK FILL EXTERNAL LEAKAGE 06-3A-0609-1 142 GN2 TANK BURST 06-3A-0609-1 145 GN2 REGULATOR VALVE FAILS TO CLOSE 06-3A-0607-4 145 GN2 REGULATOR VALVE FAILS TO OPEN 06-3A-0607-3 146 GN2 REGULATOR RELIEF FAILS TO CLOSE 06-3A-0607-5 147 GN2 REGULATOR RELIEF FAILS TO OPEN 06-3A-0606-1 148 GN2 SHUTOFF VALVE FAILS TO OPEN 06-3A-0606-1 148 GN2 SHUTOFF VALVE FAILS TO OPEN 06-3A-0615-3 152 GN2 FILL DISCONNECT EXTERNAL LEAKAGE 06-3A-0615-3 152 GN2 FILL DISCONNECT EXTERNAL LEAKAGE 06-3A-0614-3 154 GN2 VENT DISCONNECT LEAKAGE EXTERNAL 06-3A-0614-2 154 GN2 VENT DISCONNECT LEAKAGE EXTERNAL 06-3A-0610-1 167 HYDRAULIC BYPASS VALV 06-3A-0610-1 167 HYDRAULIC BYPASS VALV 06-3A-0610-3 170 HYDRAULIC RELIEF VALVE RELIEF VALVE FAILS IN BYPASS 06-3A-0628-2 172 HYDRAULIC BYPASS/RELI 05-6WA-2051-1 178 BOILER CONTROL POWER FAILS TO CLOSE	06 23 0616 3			
06-3A-0608-3 133 WATER TANK LEAKAGE - H2O EXT   06-3A-0608-1 134 WATER TANK LEAKAGE - GN2 INT   06-3A-0608-2 134 WATER TANK LEAKAGE - GN2 INT   06-3A-0613-2 136 WATER TANK FILL EXTERNAL LEAKAGE   06-3A-0613-3 136 WATER TANK FILL EXTERNAL LEAKAGE   06-3A-0609-1 142 GN2 TANK BURST   143 GN2 TANK LEAKAGE   06-3A-0609-1 145 GN2 REGULATOR VALVE FAILS TO CLOSE   06-3A-0607-4 144 GN2 REGULATOR VALVE FAILS TO CLOSE   06-3A-0607-5 147 GN2 REGULATOR RELIEF FAILS TO CLOSE   06-3A-0607-5 147 GN2 REGULATOR RELIEF FAILS TO OPEN   06-3A-0606-1 148 GN2 SHUTOFF VALVE FAILS TO OPEN   06-3A-0606-1 148 GN2 SHUTOFF VALVE FAILS TO OPEN   06-3A-0606-4 150 GN2 SHUTOFF VALVE EXTERNAL LEAKAGE   06-3A-0615-3 152 GN2 FILL DISCONNECT EXTERNAL LEAKAGE   06-3A-0615-2 152 GN2 FILL DISCONNECT EXTERNAL LEAKAGE   06-3A-0614-3 154 GN2 VENT DISCONNECT LEAKAGE, EXTERNAL   06-3A-0614-2 154 GN2 VENT DISCONNECT LEAKAGE, EXTERNAL   164 GN2 FILTER   165 GN3 FILOW EXTERNAL LEAKAGE   06-3A-0610-1 167 HYDRAULIC BYPASS VALV EXTERNAL LEAKAGE   06-3A-0610-1 167 HYDRAULIC RELIEF VALVE EXTERNAL LEAKAGE   06-3A-0610-3 170 HYDRAULIC RELIEF VALVE RELIEF VALVE FAILS IN BYPASS   06-3A-0610-3 170 HYDRAULIC RELIEF VALVE RELIEF VALVE FAIL   06-3A-0628-2 172 HYDRAULIC BYPASS/RELI COUT OF TOLERANCE   05-6WA-2051-1 178 BOILER CONTROL POWER FAILS TO CLOSE   05-6WA-2051-1 178 BOILER CONTROL POWER   04-04-04-04-04-04-04-04-04-04-04-04-04-0				
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06-3A-0608-2 134 WATER TANK LEAKAGE - GN2 INT   06-3A-0613-2 136 WATER TANK FILL EXTERNAL LEAKAGE   06-3A-0613-3 136 WATER TANK FILL EXTERNAL LEAKAGE   06-3A-0609-1 142 GN2 TANK BURST   143 GN2 TANK LEAKAGE   06-3A-0607-4 144 GN2 REGULATOR VALVE FAILS TO CLOSE   06-3A-0607-1 145 GN2 REGULATOR VALVE FAILS TO OPEN   06-3A-0607-3 146 GN2 REGULATOR RELIEF FAILS TO OPEN   06-3A-0607-5 147 GN2 REGULATOR RELIEF FAILS TO OPEN   06-3A-0606-1 148 GN2 SHUTOFF VALVE FAILS TO OPEN   06-3A-0606-1 148 GN2 SHUTOFF VALVE FAILS TO OPEN   06-3A-0606-4 150 GN2 SHUTOFF VALVE EXTERNAL LEAKAGE   06-3A-0615-3 152 GN2 FILL DISCONNECT EXTERNAL LEAKAGE   06-3A-0615-2 152 GN2 FILL DISCONNECT EXTERNAL LEAKAGE   06-3A-0616-2 154 GN2 VENT DISCONNECT LEAKAGE, EXTERNAL   06-3A-0614-2 154 GN2 VENT DISCONNECT LEAKAGE, EXTERNAL   164 GN2 FILTER LOSS OF FLOW   06-3A-0610-1 167 HYDRAULIC BYPASS VALV   06-3A-0610-1 167 HYDRAULIC BYPASS VALV   06-3A-0610-4 169 HYDRAULIC RELIEF VALVE EXTERNAL LEAKAGE   06-3A-0610-3 170 HYDRAULIC RELIEF VALVE EXTERNAL LEAKAGE   06-3A-0610-3 170 HYDRAULIC RELIEF VALVE RELIEF VALVE FAIL   06-3-0628-2 172 HYDRAULIC BYPASS/RELI   06-3-0628-2 173 HYDRAULIC BYPASS/RELI   00T OF TOLERANCE   05-6WA-2051-1 178 BOILER CONTROL POWER   06-3C-0628-2 173 HYDRAULIC BYPASS/RELI   05-6WA-2051-1 178 BOILER CONTROL POWER   06-3C-0628-2 173 HYDRAULIC BYPASS/RELI   05-6WA-2051-1 178 BOILER CONTROL POWER   06-3C-0628-2 173 HYDRAULIC BYPASS/RELI   05-6WA-2051-1 178 BOILER CONTROL POWER   05-6WA-2051-1 178 BOILER CONTROL POWER   05-6WA-2051-1 178 BOILER CONTROL POWER   05-6WA-2051-1 178 BOILER CONTROL POWER   05-6WA-2051-1 178 BOILER CONTROL POWER   05-6WA-2051-1 178 BOILER CONTROL POWER   05-6WA-2051-1 178 BOILER CONTROL POWER   05-6WA-2051-1 178 BOILER CONTROL POWER   05-6WA-2051-1 178 BOILER CONTROL POWER   05-6WA-2051-1 178 BOILER CONTROL POWER   05-6WA-2051-1 178 BOILER CONTROL POWER   05-6WA-2051-1 178 BOILER CONTROL POWER   05-6WA-2051-1 178 BOILER CONTROL POWER   05-6WA-2051-1 178 BOILER CONTROL POWER   05-6WA-2051-1 178 BOILER CONTRO				
06-3A-0613-2 06-3A-0613-3 136 WATER TANK FILL EXTERNAL LEAKAGE 06-3A-0609-1 142 GN2 TANK BURST 143 GN2 TANK LEAKAGE 06-3A-0607-4 144 GN2 REGULATOR VALVE 66-3A-0607-1 145 GN2 REGULATOR VALVE 16-3A-0607-3 146 GN2 REGULATOR RELIEF 16-3A-0607-5 147 GN2 REGULATOR RELIEF 16-3A-0606-1 148 GN2 REGULATOR RELIEF 16-3A-0606-1 149 GN2 REGULATOR RELIEF 16-3A-0606-1 150 GN2 SHUTOFF VALVE 16-3A-0615-3 152 GN2 FILL DISCONNECT 16-3A-0615-3 152 GN2 FILL DISCONNECT 16-3A-0614-3 154 GN2 VENT DISCONNECT 165 GN2 VENT DISCONNECT 166 GN2 VENT DISCONNECT 167 GN2 VENT DISCONNECT 168 GN2 VENT DISCONNECT 169 GN2 VENT DISCONNECT 160-3A-0614-2 150 GN2 VENT DISCONNECT 160-3A-0614-2 150 GN2 VENT DISCONNECT 160-3A-0610-5 160 HYDRAULIC BYPASS VALV 160-3A-0610-1 167 HYDRAULIC BYPASS VALV 160-3A-0610-1 168 HYRAULIC RELIEF VALVE 169 HYDRAULIC RELIEF VALVE 160-3A-0610-3 170 HYDRAULIC RELIEF VALVE 160-3A-0610-3 170 HYDRAULIC RELIEF VALVE 160-3A-0610-3 170 HYDRAULIC RELIEF VALVE 173 HYDRAULIC BYPASS/RELI 174 HYDRAULIC BYPASS/RELI 175 HYDRAULIC BYPASS/RELI 176 GNA-2051-1 177 BOILER CONTROL POWER 177 GOVERNMENT 178 BOILER CONTROL POWER 178 GNA-2051-1 178 BOILER CONTROL POWER 179 GNA-2051-1 178 BOILER CONTROL POWER 179 GNA-2051-1 178 BOILER CONTROL POWER 179 GNA-2051-1 178 BOILER CONTROL POWER 179 GNA-2051-1 178 BOILER CONTROL POWER 179 GNA-2051-1 178 BOILER CONTROL POWER 179 GNA-2051-1 178 BOILER CONTROL POWER 179 GNA-2051-1 178 BOILER CONTROL POWER				
06-3A-0613-3         136         WATER TANK FILL         EXTERNAL LEAKAGE           06-3A-0609-1         142         GN2 TANK         BURST           143         GN2 TANK         LEAKAGE           06-3A-0607-4         144         GN2 REGULATOR VALVE         FAILS TO CLOSE           06-3A-0607-1         145         GN2 REGULATOR VALVE         FAILS TO OPEN           06-3A-0607-3         146         GN2 REGULATOR RELIEF         FAILS TO OPEN           06-3A-0607-5         147         GN2 REGULATOR RELIEF         FAILS TO OPEN           06-3A-0606-1         148         GN2 SHUTOFF VALVE         FAILS TO OPEN           06-3A-0615-3         152         GN2 SHUTOFF VALVE         EXTERNAL LEAKAGE           06-3A-0615-3         152         GN2 FILL DISCONNECT         EXTERNAL LEAKAGE           06-3A-0615-2         152         GN2 FILL DISCONNECT         EXTERNAL LEAKAGE           06-3A-0614-3         154         GN2 VENT DISCONNECT         LEAKAGE, EXTERNAL           06-3A-0614-2         154         GN2 VENT DISCONNECT         LEAKAGE, EXTERNAL           164         GN2 FILTER         LOSS OF FLOW           06-3A-0610-5         166         HYDRAULIC BYPASS VALV         EXTERNAL LEAKAGE           06-3A-0610-4         169				
06-3A-0609-1 142 GN2 TANK LEAKAGE 06-3A-0607-4 144 GN2 REGULATOR VALVE FAILS TO CLOSE 06-3A-0607-1 145 GN2 REGULATOR VALVE FAILS TO OPEN 06-3A-0607-3 146 GN2 REGULATOR RELIEF FAILS TO CLOSE 06-3-0607-5 147 GN2 REGULATOR RELIEF FAILS TO OPEN 06-3A-0606-1 148 GN2 SHUTOFF VALVE FAILS TO OPEN 06-3A-0606-1 148 GN2 SHUTOFF VALVE FAILS TO OPEN 06-3A-0606-4 150 GN2 SHUTOFF VALVE EXTERNAL LEAKAGE 06-3A-0615-3 152 GN2 FILL DISCONNECT EXTERNAL LEAKAGE 06-3A-0615-2 152 GN2 FILL DISCONNECT EXTERNAL LEAKAGE 06-3A-0615-2 154 GN2 VENT DISCONNECT LEAKAGE, EXTERNAL 06-3A-0614-2 154 GN2 VENT DISCONNECT LEAKAGE, EXTERNAL 164 GN2 FILTER LOSS OF FLOW 06-3A-0610-5 166 HYDRAULIC BYPASS VALV EXTERNAL LEAKAGE 06-3A-0610-1 167 HYDRAULIC BYPASS VALV FAILS IN BYPASS 02-6-SYSTEM-2 168 HYRAULIC RELIEF VALVE EXTERNAL LEAKAGE 06-3A-0610-4 169 HYDRAULIC RELIEF VALVE EXTERNAL LEAKAGE 06-3A-0610-3 170 HYDRAULIC RELIEF VALVE RELIEF VALVE FAIL 06-3-0628-2 172 HYDRAULIC BYPASS/RELI CUT OF TOLERANCE 06-3-0628-2 173 HYDRAULIC BYPASS/RELI OUT OF TOLERANCE 05-6WA-2051-1 178 BOILER CONTROL POWER FAILS TO CLOSE				EXTERNAL LEAKAGE
143 GN2 TANK  16-3A-0607-4  144 GN2 REGULATOR VALVE  16-3A-0607-1  145 GN2 REGULATOR VALVE  16-3A-0607-3  146 GN2 REGULATOR RELIEF  16-3A-0607-5  147 GN2 REGULATOR RELIEF  16-3A-0606-1  148 GN2 SHUTOFF VALVE  16-3A-0606-4  150 GN2 SHUTOFF VALVE  151LS TO OPEN  16-3A-0606-4  150 GN2 SHUTOFF VALVE  152 GN2 SHUTOFF VALVE  152 GN2 FILL DISCONNECT  152 GN2 FILL DISCONNECT  153 GN2 FILL DISCONNECT  154 GN2 VENT DISCONNECT  155 GN2 FILL DISCONNECT  164 GN2 VENT DISCONNECT  165 GN2 FILTER  166 GN2 FILTER  167 GN2 VENT DISCONNECT  168 GN2 VENT DISCONNECT  169 GN3 VENT DISCONNECT  160-3A-0614-2  160-3A-0610-5  160 HYDRAULIC BYPASS VALV  161 GN3 FILTER  162 GN3 FILTER  163 GN3 FILTER  164 GN2 FILTER  165 GN3 FLOW  166 GN3 FLOW  167 GN3 FLOW  168 GN3 FLOW  169 GN3 FLOW  169 GN3 FLOW  169 GN3 FLOW  160-3A-0610-4  160 HYDRAULIC BYPASS VALV  160-3A-0610-3  170 HYDRAULIC RELIEF VALVE  171 GN3 GN3 FAILS  172 HYDRAULIC BYPASS/RELI  173 GN3 GN3 GN3 GN3 GN3 GN3 GN3 GN3 GN3 GN				
06-3A-0607-4         144         GN2 REGULATOR VALVE         FAILS TO CLOSE           06-3A-0607-1         145         GN2 REGULATOR VALVE         FAILS TO OPEN           06-3A-0607-3         146         GN2 REGULATOR RELIEF         FAILS TO CLOSE           06-3-0607-5         147         GN2 REGULATOR RELIEF         FAILS TO OPEN           06-3A-0606-1         148         GN2 SHUTOFF VALVE         FAILS TO OPEN           06-3A-0606-4         150         GN2 SHUTOFF VALVE         EXTERNAL LEAKAGE           06-3A-0615-3         152         GN2 FILL DISCONNECT         EXTERNAL LEAKAGE           06-3A-0615-2         152         GN2 FILL DISCONNECT         EXTERNAL LEAKAGE           06-3A-0614-3         154         GN2 VENT DISCONNECT         LEAKAGE, EXTERNAL           06-3A-0614-2         154         GN2 VENT DISCONNECT         LEAKAGE, EXTERNAL           06-3A-0610-5         166         HYDRAULIC BYPASS VALV         EXTERNAL LEAKAGE           06-3A-0610-1         167         HYDRAULIC BYPASS VALV         FAILS IN BYPASS           02-6-SYSTEM-2         168         HYRAULIC RELIEF VALV         RELIEF VALVE FAIL           06-3A-0610-3         170         HYDRAULIC RELIEF VALV         RELIEF VALVE FAIL           06-3-0628-2         172         HYDR	00-3A 0003 I			LEAKAGE
06-3A-0607-1         145         GN2 REGULATOR VALVE         FAILS TO OPEN           06-3A-0607-3         146         GN2 REGULATOR RELIEF         FAILS TO CLOSE           06-3-0607-5         147         GN2 REGULATOR RELIEF         FAILS TO OPEN           06-3A-0606-1         148         GN2 SHUTOFF VALVE         FAILS TO OPEN           06-3A-0606-4         150         GN2 SHUTOFF VALVE         EXTERNAL LEAKAGE           06-3A-0615-3         152         GN2 FILL DISCONNECT         EXTERNAL LEAKAGE           06-3A-0615-2         152         GN2 FILL DISCONNECT         LEAKAGE, EXTERNAL           06-3A-0614-3         154         GN2 VENT DISCONNECT         LEAKAGE, EXTERNAL           06-3A-0614-2         154         GN2 VENT DISCONNECT         LEAKAGE, EXTERNAL           06-3A-0610-5         166         HYDRAULIC BYPASS VALV         EXTERNAL LEAKAGE           06-3A-0610-5         166         HYDRAULIC BYPASS VALV         FAILS IN BYPASS           02-6-SYSTEM-2         168         HYRAULIC RELIEF VALVE         EXTERNAL LEAKAGE           06-3A-0610-4         169         HYDRAULIC RELIEF VALV         RELIEF VALVE FAIL           06-3A-0610-3         170         HYDRAULIC BYPASS/RELI         ERRONEOUS OUTPUT           06-3-0628-2         172 <td< td=""><td>06-31-0607-4</td><td></td><td></td><td>FAILS TO CLOSE</td></td<>	06-31-0607-4			FAILS TO CLOSE
06-3A-0607-3         146         GN2 REGULATOR RELIEF         FAILS TO CLOSE           06-3-0607-5         147         GN2 REGULATOR RELIEF         FAILS TO OPEN           06-3A-0606-1         148         GN2 SHUTOFF VALVE         FAILS TO OPEN           06-3A-0606-4         150         GN2 SHUTOFF VALVE         EXTERNAL LEAKAGE           06-3A-0615-3         152         GN2 FILL DISCONNECT         EXTERNAL LEAKAGE           06-3A-0615-2         152         GN2 FILL DISCONNECT         EXTERNAL LEAKAGE           06-3A-0614-3         154         GN2 VENT DISCONNECT         LEAKAGE, EXTERNAL           06-3A-0614-2         154         GN2 VENT DISCONNECT         LEAKAGE, EXTERNAL           06-3A-0610-5         166         HYDRAULIC BYPASS VALV         EXTERNAL LEAKAGE           06-3A-0610-5         166         HYDRAULIC BYPASS VALV         FAILS IN BYPASS           02-6-SYSTEM-2         168         HYRAULIC RELIEF VALVE         EXTERNAL LEAKAGE           06-3A-0610-4         169         HYDRAULIC RELIEF VALV         RELIEF VALVE FAIL           06-3A-0610-3         170         HYDRAULIC RELIEF VALV         RELIEF VALVE FAIL           06-3-0628-2         172         HYDRAULIC BYPASS/RELI         OUT OF TOLERANCE           05-6WA-2051-1         178				FAILS TO OPEN
06-3-0607-5         147         GN2         REGULATOR RELIEF         FAILS         TO OPEN           06-3A-0606-1         148         GN2         SHUTOFF         VALVE         FAILS         TO OPEN           06-3A-0606-4         150         GN2         SHUTOFF         VALVE         EXTERNAL         LEAKAGE           06-3A-0615-3         152         GN2         FILL         DISCONNECT         EXTERNAL         LEAKAGE           06-3A-0615-2         152         GN2         FILL         DISCONNECT         EXTERNAL         LEAKAGE           06-3A-0614-3         154         GN2         VENT         DISCONNECT         LEAKAGE, EXTERNAL           06-3A-0614-2         154         GN2         VENT         DISCONNECT         LEAKAGE, EXTERNAL           164         GN2         FILTER         LOSS OF FLOW           06-3A-0610-5         166         HYDRAULIC BYPASS VALV         EXTERNAL LEAKAGE           06-3A-0610-1         167         HYDRAULIC BYPASS VALV         FAILS IN BYPASS           06-3A-0610-2         168         HYRAULIC RELIEF VALVE         EXTERNAL LEAKAGE           06-3A-0610-3         170         HYDRAULIC RELIEF VALVE         RELIEF VALVE FAIL           06-3-0628-2         172			GN2 REGULATOR RELIEF	
06-3A-0606-1 148 GN2 SHUTOFF VALVE FAILS TO OPEN 06-3A-0606-4 150 GN2 SHUTOFF VALVE EXTERNAL LEAKAGE 06-3A-0615-3 152 GN2 FILL DISCONNECT EXTERNAL LEAKAGE 06-3A-0615-2 152 GN2 FILL DISCONNECT EXTERNAL LEAKAGE 06-3A-0614-3 154 GN2 VENT DISCONNECT LEAKAGE, EXTERNAL 06-3A-0614-2 154 GN2 VENT DISCONNECT LEAKAGE, EXTERNAL 164 GN2 FILTER LOSS OF FLOW 06-3A-0610-5 166 HYDRAULIC BYPASS VALV EXTERNAL LEAKAGE 06-3A-0610-1 167 HYDRAULIC BYPASS VALV FAILS IN BYPASS 02-6-SYSTEM-2 168 HYRAULIC RELIEF VALVE EXTERNAL LEAKAGE 06-3A-0610-4 169 HYDRAULIC RELIEF VALVE EXTERNAL LEAKAGE 06-3A-0610-3 170 HYDRAULIC RELIEF VALV RELIEF VALVE FAIL 06-3-0628-2 172 HYDRAULIC BYPASS/RELI ERRONEOUS OUTPUT 06-3-0628-2 173 HYDRAULIC BYPASS/RELI OUT OF TOLERANCE 05-6WA-2051-1 178 BOILER CONTROL POWER LOSS OF OUTPUT 05-6WA-2051-1 178 BOILER CONTROL POWER FAILS TO CLOSE				FAILS TO OPEN
06-3A-0606-4         150         GN2 SHUTOFF VALVE         EXTERNAL LEAKAGE           06-3A-0615-3         152         GN2 FILL DISCONNECT         EXTERNAL LEAKAGE           06-3A-0615-2         152         GN2 FILL DISCONNECT         EXTERNAL LEAKAGE           06-3A-0614-3         154         GN2 VENT DISCONNECT         LEAKAGE, EXTERNAL           06-3A-0614-2         154         GN2 VENT DISCONNECT         LEAKAGE, EXTERNAL           164         GN2 FILTER         LOSS OF FLOW           06-3A-0610-5         166         HYDRAULIC BYPASS VALV         EXTERNAL LEAKAGE           06-3A-0610-1         167         HYDRAULIC BYPASS VALV         FAILS IN BYPASS           06-3A-0610-2         168         HYRAULIC RELIEF VALVE         EXTERNAL LEAKAGE           06-3A-0610-3         170         HYDRAULIC RELIEF VALVE         RELIEF VALVE FAIL           06-3A-0610-3         170         HYDRAULIC BYPASS/RELI         ERRONEOUS OUTPUT           06-3-0628-2         172         HYDRAULIC BYPASS/RELI         OUT OF TOLERANCE           05-6WA-2051-1         177         BOILER CONTROL POWER         FAILS TO CLOSE           05-6WA-2051-1         178         BOILER CONTROL POWER         FAILS TO CLOSE				FAILS TO OPEN
152   GN2 FILL DISCONNECT   EXTERNAL LEAKAGE			GN2 SHUTOFF VALVE	EXTERNAL LEAKAGE
06-3A-0615-2 152 GN2 FILL DISCONNECT EAKAGE 06-3A-0614-3 154 GN2 VENT DISCONNECT LEAKAGE, EXTERNAL 154 GN2 VENT DISCONNECT LEAKAGE, EXTERNAL 164 GN2 FILTER LOSS OF FLOW 164 GN2 FILTER 165 06-3A-0610-5 166 HYDRAULIC BYPASS VALV FAILS IN BYPASS 02-6-SYSTEM-2 168 HYRAULIC RELIEF VALVE 169 HYDRAULIC RELIEF VALV RELIEF VALVE FAIL 160-3A-0610-4 169 HYDRAULIC RELIEF VALV RELIEF VALVE FAIL 160-3A-0610-3 170 HYDRAULIC RELIEF VALV RELIEF VALVE FAIL 170 HYDRAULIC BYPASS/RELI 171 HYDRAULIC BYPASS/RELI 172 HYDRAULIC BYPASS/RELI 173 HYDRAULIC BYPASS/RELI 174 HYDRAULIC BYPASS/RELI 175 HYDRAULIC BYPASS/RELI 176 UT OF TOLERANCE 177 HYDRAULIC BYPASS/RELI 178 HYDRAULIC BYPASS/RELI 179 HYDRAULIC BYPASS/RELI 170 HYDRAULIC BYPASS/RELI 170 HYDRAULIC BYPASS/RELI 171 HYDRAULIC BYPASS/RELI 172 HYDRAULIC BYPASS/RELI 173 HYDRAULIC BYPASS/RELI 174 HYDRAULIC BYPASS/RELI 175 HYDRAULIC BYPASS/RELI 176 HYDRAULIC BYPASS/RELI 177 HYDRAULIC BYPASS/RELI 178 HYDRAULIC BYPASS/RELI 179 HYDRAULIC BYPASS/RELI 170 HYDRAULIC BYPASS/RELI 170 HYDRAULIC BYPASS/RELI 171 HYDRAULIC BYPASS/RELI 172 HYDRAULIC BYPASS/RELI 173 HYDRAULIC BYPASS/RELI 174 HYDRAULIC BYPASS/RELI 175 HYDRAULIC BYPASS/RELI 176 HYDRAULIC BYPASS/RELI 177 HYDRAULIC BYPASS/RELI 178 HYDRAULIC BYPASS/RELI 179 HYDRAULIC BYPASS/RELI 170 HYDRAULIC BYPASS/RELI 170 HYDRAULIC BYPASS/RELI 170 HYDRAULIC BYPASS/RELI 170 HYDRAULIC BYPASS/RELI 170 HYDRAULIC BYPASS/RELI 175 HYDRAULIC BYPASS/RELI 176 HYDRAULIC BYPASS/RELI 177 HYDRAULIC BYPASS/RELI 178 HYDRAULIC BYPASS/RELI 179 HYDRAULIC BYPASS/RELI 179 HYDRAULIC BYPASS/RELI 170 HYDRAULIC BYPASS/RELI 170 HYDRAULIC BYPASS/RELI 170 HYDRAULIC BYPASS/RELI 170 HYDRAULIC BYPASS/RELI 170 HYDRAULIC BYPASS/RELI 170 HYDRAULIC BYPASS/RELI 170 HYDRAULIC BYPASS/RELI 170 HYDRAULIC BYPASS/RELI 170 HYDRAULIC BYPASS/RELI 170 HYDRAULIC BYPASS/RELI 170 HYDRAULIC BYPASS/RELI 170 HYDRAULIC BYPASS/RELI 170 HYDRAULIC BYPASS/RELI 170 HYDRAULIC BYPASS/RELI 170 HYDRAULIC BYPASS/RELI 170 HYDRAULIC BYPASS/RELI 170 HYDRAULIC BYPASS/RELI 170 HYDRAULIC BYPASS/RELI 170 HYDRAULIC BYPASS/RE		152	GN2 FILL DISCONNECT	
154   GN2 VENT DISCONNECT   LEAKAGE, EXTERNAL		152	GN2 FILL DISCONNECT	
06-3A-0614-2 154 GN2 VENT DISCONNECT 164 GN2 FILTER 105 OF FLOW  06-3A-0610-5 166 HYDRAULIC BYPASS VALV 06-3A-0610-1 167 HYDRAULIC BYPASS VALV 168 HYRAULIC RELIEF VALVE 169 HYDRAULIC RELIEF VALV 16-3A-0610-4 169 HYDRAULIC RELIEF VALV 16-3A-0610-3 170 HYDRAULIC RELIEF VALV 16-3-0628-2 172 HYDRAULIC BYPASS/RELI 174 HYDRAULIC BYPASS/RELI 175 HYDRAULIC BYPASS/RELI 176-3-0628-2 177 BOILER CONTROL POWER 105-6WA-2051-1 178 BOILER CONTROL POWER 105-07-07-07-07-07-07-07-07-07-07-07-07-07-		154	GN2 VENT DISCONNECT	
06-3A-0610-5 166 HYDRAULIC BYPASS VALV EXTERNAL LEAKAGE 06-3A-0610-1 167 HYDRAULIC BYPASS VALV FAILS IN BYPASS 02-6-SYSTEM-2 168 HYRAULIC RELIEF VALVE EXTERNAL LEAKAGE 06-3A-0610-4 169 HYDRAULIC RELIEF VALV RELIEF VALVE FAIL 06-3A-0610-3 170 HYDRAULIC RELIEF VALV RELIEF VALVE FAIL 06-3-0628-2 172 HYDRAULIC BYPASS/RELI ERRONEOUS OUTPUT 06-3-0628-2 173 HYDRAULIC BYPASS/RELI OUT OF TOLERANCE 05-6WA-2051-1 177 BOILER CONTROL POWER 10SS OF OUTPUT 05-6WA-2051-1 178 BOILER CONTROL POWER FAILS TO CLOSE		154	GN2 VENT DISCONNECT	
06-3A-0610-1 167 HYDRAULIC BYPASS VALV FAILS IN BYPASS 02-6-SYSTEM-2 168 HYRAULIC RELIEF VALVE EXTERNAL LEAKAGE 06-3A-0610-4 169 HYDRAULIC RELIEF VALV RELIEF VALVE FAIL 06-3A-0610-3 170 HYDRAULIC RELIEF VALV RELIEF VALVE FAIL 06-3-0628-2 172 HYDRAULIC BYPASS/RELI ERRONEOUS OUTPUT 06-3-0628-2 173 HYDRAULIC BYPASS/RELI OUT OF TOLERANCE 05-6WA-2051-1 177 BOILER CONTROL POWER LOSS OF OUTPUT 05-6WA-2051-1 178 BOILER CONTROL POWER FAILS TO CLOSE		164	GN2 FILTER	
06-3A-0610-1 167 HYDRAULIC BYPASS VALV FAILS IN BYPASS 02-6-SYSTEM-2 168 HYRAULIC RELIEF VALVE EXTERNAL LEAKAGE 169 HYDRAULIC RELIEF VALV RELIEF VALVE FAIL 170 HYDRAULIC RELIEF VALV RELIEF VALVE FAIL 171 HYDRAULIC BYPASS/RELI ERRONEOUS OUTPUT 172 HYDRAULIC BYPASS/RELI OUT OF TOLERANCE 173 HYDRAULIC BYPASS/RELI OUT OF TOLERANCE 174 BOILER CONTROL POWER 175 TOLESE 177 BOILER CONTROL POWER 175 TOLESE 177 CLOSE 177 BOILER CONTROL POWER 175 TOLESE 177 CLOSE 177 CLOSE 177 CONTROL POWER 175 CLOSE 177 CLOSE 177 CLOSE 177 CLOSE 177 CLOSE 177 CLOSE 177 CLOSE 177 CLOSE 177 CLOSE 177 CLOSE 177 CLOSE 177 CLOSE 177 CLOSE 177 CLOSE 177 CLOSE 177 CLOSE 177 CLOSE 177 CLOSE 177 CLOSE 177 CLOSE 177 CLOSE 177 CLOSE 177 CLOSE 177 CLOSE 177 CLOSE 177 CLOSE 177 CLOSE 177 CLOSE 177 CLOSE 177 CLOSE 177 CLOSE 177 CLOSE 177 CLOSE 177 CLOSE 177 CLOSE 177 CLOSE 177 CLOSE 177 CLOSE 177 CLOSE 177 CLOSE 177 CLOSE 177 CLOSE 177 CLOSE 177 CLOSE 177 CLOSE 177 CLOSE 177 CLOSE 177 CLOSE 177 CLOSE 177 CLOSE 177 CLOSE 177 CLOSE 177 CLOSE 177 CLOSE 177 CLOSE 177 CLOSE 177 CLOSE 177 CLOSE 177 CLOSE 177 CLOSE 177 CLOSE 177 CLOSE 177 CLOSE 177 CLOSE 177 CLOSE 177 CLOSE 177 CLOSE 177 CLOSE 177 CLOSE 177 CLOSE 177 CLOSE 177 CLOSE 177 CLOSE 177 CLOSE 177 CLOSE 177 CLOSE 177 CLOSE 177 CLOSE 177 CLOSE 177 CLOSE 177 CLOSE 177 CLOSE 177 CLOSE 177 CLOSE 177 CLOSE 177 CLOSE 177 CLOSE 177 CLOSE 177 CLOSE 177 CLOSE 177 CLOSE 177 CLOSE 177 CLOSE 177 CLOSE 177 CLOSE 177 CLOSE 177 CLOSE 177 CLOSE 177 CLOSE 177 CLOSE 177 CLOSE 177 CLOSE 177 CLOSE 177 CLOSE 177 CLOSE 177 CLOSE 177 CLOSE 177 CLOSE 177 CLOSE 177 CLOSE 177 CLOSE 177 CLOSE 177 CLOSE 177 CLOSE 177 CLOSE 177 CLOSE 177 CLOSE 177 CLOSE 177 CLOSE 177 CLOSE 177 CLOSE 177 CLOSE 177 CLOSE 177 CLOSE 177 CLOSE 177 CLOSE 177 CLOSE 177 CLOSE 177 CLOSE 177 CLOSE 177 CLOSE 177 CLOSE 177 CLOSE 177 CLOSE 177 CLOSE 177 CLOSE 177 CLOSE 177 CLOSE 177 CLOSE 177 CLOSE 177 CLOSE 177 CLOSE 177 CLOSE 177 CLOSE 177 CLOSE 177 CLOSE 177 CLOSE 177 CLOSE 177 CLOSE 177 CLOSE 177 CLOSE 177 CLOSE 177 CLOSE 177 CLOSE 177 CLOSE 177 CLOSE 1	06-3A-0610-5	166		
06-3A-0610-4 169 HYDRAULIC RELIEF VALV RELIEF VALVE FAIL 06-3A-0610-3 170 HYDRAULIC RELIEF VALV RELIEF VALVE FAIL 06-3-0628-2 172 HYDRAULIC BYPASS/RELI ERRONEOUS OUTPUT 06-3-0628-2 173 HYDRAULIC BYPASS/RELI OUT OF TOLERANCE 05-6WA-2051-1 177 BOILER CONTROL POWER LOSS OF OUTPUT 05-6WA-2051-1 178 BOILER CONTROL POWER FAILS TO CLOSE		167	HYDRAULIC BYPASS VALV	
06-3A-0610-3 170 HYDRAULIC RELIEF VALV RELIEF VALVE FAIL 06-3-0628-2 172 HYDRAULIC BYPASS/RELI ERRONEOUS OUTPUT 06-3-0628-2 173 HYDRAULIC BYPASS/RELI OUT OF TOLERANCE 05-6WA-2051-1 177 BÖILER CONTROL POWER LOSS OF OUTPUT 05-6WA-2051-1 178 BOILER CONTROL POWER FAILS TO CLOSE	02-6-SYSTEM-2	168		
06-3A-0610-3 170 HYDRAULIC RELIEF VALV RELIEF VALVE FAIL 06-3-0628-2 172 HYDRAULIC BYPASS/RELI ERRONEOUS OUTPUT 06-3-0628-2 173 HYDRAULIC BYPASS/RELI OUT OF TOLERANCE 05-6WA-2051-1 177 BOILER CONTROL POWER LOSS OF OUTPUT 05-6WA-2051-1 178 BOILER CONTROL POWER FAILS TO CLOSE	06-3A-0610-4	169		
06-3-0628-2 173 HYDRAULIC BYPASS/RELI OUT OF TOLERANCE 05-6WA-2051-1 177 BOILER CONTROL POWER LOSS OF OUTPUT 05-6WA-2051-1 178 BOILER CONTROL POWER FAILS TO CLOSE		170		
05-6WA-2051-1 177 BOILER CONTROL POWER LOSS OF OUTPUT 05-6WA-2051-1 178 BOILER CONTROL POWER FAILS TO CLOSE	06-3-0628-2	172		
05-6WA-2051-1 178 BOILER CONTROL POWER FAILS TO CLOSE	06-3-0628-2	173		
OJ OHA 2001 I	05-6WA-2051-1			
05-6WA-2054-1 179 BOILER CNTRL SW LOSS OF OUTPUT	05-6WA-2051-1			
	05-6WA-2054-1	179	BOILER CNTRL SW	LOSS OF OUTPUT

NASA FMEA	MDAC-ID	ITEM	FAILURE MODE
05-6WA-2054-1			FAILS TO CLOSE
05-6W-2179-2	189	RPC	FAILS ON
03 011 2173 2	197		
02-6-E24-1	401	ACCUMULATOR	EXTERNAL LEAKAGE
02-6-SYSTEM-2	402	ACCUMULATOR	EXTERNAL LEAKAGE
02-6-E24-5		ACCUMULATOR	STRUCTURAL FAILURE
02-6-E24-1			EXTERNAL LEAKAGE
02-6-SYSTEM-2	414	SSME ACCUMULATOR	EXTERNAL LEAKAGE
02-6-A16-3			
		PRESS ACTIVATED RELIEF	
02-6-SYSTEM-2	432	BLEED VALVE	FAILS TO REMAIN
02-6-SYSTEM-2	434	PRESS ACTUATED CNTRL	EXTERNAL LEAK
02-6-E27	439	FILTER	STRUCTURAL FAILURE
02-6-E02-1	448		
02-6-E02-2	448		
00.6 000 1	4.40	AUTAU BICAGUUDAM	EXTERNAL LEAKAGE
02-6-E02-2	449	QUICK DISCONNECT	EXTERNAL LEAKAGE
02-6-C08-1	450	QUICK DISCONNECT	EXTERNAL LEAKAGE
02-6-C08-2	450	QUICK DISCONNECT	EXTERNAL LEAKAGE
02-6-A02-2	451	QUICK DISCONNECT	INADVERTENT DISCO
02-6-A02-12	451	QUICK DISCONNECT	INADVERTENT DISCO
02-6-A02-1	452	QUICK DISCONNECT	INADVERTENT DISCO
02-6-SYSTEM-2	453	QUICK DISCONNECT	EXTERNAL LEAK
02-6-SYSTEM-2	454	QUICK DISCONNECT	EXTERNAL LEAK
02-6-E02-1 02-6-E02-2 02-6-C08-1 02-6-C08-2 02-6-A02-2 02-6-A02-12 02-6-A02-1 02-6-SYSTEM-2 02-6-SYSTEM-2 02-6-A07-2	456	CHECK VALVE	FAILS TO OPEN
02-6-SYSTEM-2 02-6-A11-1	457	HOSE AND SWIVEL ASSY	EXTERNAL LEAKAGE
02-6-A11-1	457	HOSE AND SWIVEL ASSY	EXTERNAL LEAKAGE
02-6-SYSTEM-2	458	HOSE AND SWIVEL ASSY	EXTERNAL LEAKAGE
02-6-A15-1	458	HOSE AND SWIVEL ASSY	EXTERNAL LEAKAGE
02-6-SYSTEM-2	459	HOSE AND SWIVEL ASSY	EXTERNAL LEAKAGE
	459		EXTERNAL LEAKAGE
02-6-SYSTEM-2	460	HOSE AND SWIVEL ASSY	EXTERNAL LEAKAGE
02-6-E28-1		HOSE AND SWIVEL ASSY	EXTERNAL LEAKAGE
02-6-H04-1		NOSE WHEEL STEERING	STRUCTURAL FAILURE
02-6-G10-1	462	MAIN LANDING GEAR	STRUCTURAL FAILURE
02-6-G11-1	463	MAIN LANDING GEAR	STRUCTURAL FAILURE
02-6-SYSTEM-3	464	HYDRAULIC LINE	LINE RUPTURE
02-6-SYSTEM-3	465	HYDRAULIC LINE	LINE RUPTURE
02-6-SYSTEM-3	466	HYDRAULIC LINE	LINE RUPTURE
02-6-SYSTEM-3	467	HYDRAULIC LINE	LINE RUPTURE
02-6-SYSTEM-3	468	HYDRAULIC LINE	LINE RUPTURE
02-6-G04-1	469	REDUNDANT SHUTOFF VLV	FAILS TO CLOSE
02-6-SYSTEM-2	471	REDUNDANT SHUTOFF VLV	EXTERNAL LEAK
02-6-G05-1	472	LANDING GEAR DUMP SOL	FAILS TO OPEN
02-6-SYSTEM-2	474	LANDING GEAR DUMP SOL	EXTERNAL LEAK
02-6-E23-1	476	PRIORITY VALVE	LEAKAGE, INTERNAL
02-6-E23-2	477	PRIORITY VALVE	LEAKAGE, INTERNAL
02-6-C07-2	479	LANDING GEAR ISOLATION	FAILS TO OPEN
02-6-C07-2	480	LANDING GEAR ISOLATION	PREMATURE CLOSE
02-6-C07-1	481	LANDING GEAR ISOLATION	FAILS TO CLOSE

O2-6-C07-1	NASA FMEA	MDAC-ID	ITEM	FAILURE MODE
No.   Color   Color   Color   Color   Color   Color   Color   Color   Color   Color   Color   Color   Color   Color   Color   Color   Color   Color   Color   Color   Color   Color   Color   Color   Color   Color   Color   Color   Color   Color   Color   Color   Color   Color   Color   Color   Color   Color   Color   Color   Color   Color   Color   Color   Color   Color   Color   Color   Color   Color   Color   Color   Color   Color   Color   Color   Color   Color   Color   Color   Color   Color   Color   Color   Color   Color   Color   Color   Color   Color   Color   Color   Color   Color   Color   Color   Color   Color   Color   Color   Color   Color   Color   Color   Color   Color   Color   Color   Color   Color   Color   Color   Color   Color   Color   Color   Color   Color   Color   Color   Color   Color   Color   Color   Color   Color   Color   Color   Color   Color   Color   Color   Color   Color   Color   Color   Color   Color   Color   Color   Color   Color   Color   Color   Color   Color   Color   Color   Color   Color   Color   Color   Color   Color   Color   Color   Color   Color   Color   Color   Color   Color   Color   Color   Color   Color   Color   Color   Color   Color   Color   Color   Color   Color   Color   Color   Color   Color   Color   Color   Color   Color   Color   Color   Color   Color   Color   Color   Color   Color   Color   Color   Color   Color   Color   Color   Color   Color   Color   Color   Color   Color   Color   Color   Color   Color   Color   Color   Color   Color   Color   Color   Color   Color   Color   Color   Color   Color   Color   Color   Color   Color   Color   Color   Color   Color   Color   Color   Color   Color   Color   Color   Color   Color   Color   Color   Color   Color   Color   Color   Color   Color   Color   Color   Color   Color   Color   Color   Color   Color   Color   Color   Color   Color   Color   Color   Color   Color   Color   Color   Color   Color   Color   Color   Color   Color   Color   Color   Color   Color   Color   Color   Color   Color   Color				
No.   Color   Color   Color   Color   Color   Color   Color   Color   Color   Color   Color   Color   Color   Color   Color   Color   Color   Color   Color   Color   Color   Color   Color   Color   Color   Color   Color   Color   Color   Color   Color   Color   Color   Color   Color   Color   Color   Color   Color   Color   Color   Color   Color   Color   Color   Color   Color   Color   Color   Color   Color   Color   Color   Color   Color   Color   Color   Color   Color   Color   Color   Color   Color   Color   Color   Color   Color   Color   Color   Color   Color   Color   Color   Color   Color   Color   Color   Color   Color   Color   Color   Color   Color   Color   Color   Color   Color   Color   Color   Color   Color   Color   Color   Color   Color   Color   Color   Color   Color   Color   Color   Color   Color   Color   Color   Color   Color   Color   Color   Color   Color   Color   Color   Color   Color   Color   Color   Color   Color   Color   Color   Color   Color   Color   Color   Color   Color   Color   Color   Color   Color   Color   Color   Color   Color   Color   Color   Color   Color   Color   Color   Color   Color   Color   Color   Color   Color   Color   Color   Color   Color   Color   Color   Color   Color   Color   Color   Color   Color   Color   Color   Color   Color   Color   Color   Color   Color   Color   Color   Color   Color   Color   Color   Color   Color   Color   Color   Color   Color   Color   Color   Color   Color   Color   Color   Color   Color   Color   Color   Color   Color   Color   Color   Color   Color   Color   Color   Color   Color   Color   Color   Color   Color   Color   Color   Color   Color   Color   Color   Color   Color   Color   Color   Color   Color   Color   Color   Color   Color   Color   Color   Color   Color   Color   Color   Color   Color   Color   Color   Color   Color   Color   Color   Color   Color   Color   Color   Color   Color   Color   Color   Color   Color   Color   Color   Color   Color   Color   Color   Color   Color   Color   Color   Color   Color	02-6-007-1	482	LANDING GEAR ISOLATION	PREMATURE OPEN
V2-6-C13-2	02-6-SVSTEM-2	484		
1.   1.   1.   1.   1.   1.   1.   1.	02-6-G13-2	486		
Q2-6-SYSTEM-2	02-0 G13 2	487		FAILS TO CLOSE
Q2-6-G14-1	02-6-SYSTEM-2		TANDING GRAP CONTROL	EXTERNAL LEAK
02-6-G02-2 494 LANDING GEAR CONTROL 02-6-A06-1 495 MPS/TVC SHUTOFF VALVE 02-6-A06-2 496 MPS/TVC SHUTOFF VALVE 02-6-A06-3 497 MPS/TVC SHUTOFF VALVE 02-6-SYSTEM-2 498 MPS/TVC SHUTOFF VALVE 02-6-SYSTEM-2 600 PUMP (MECHANICAL) 02-6-E06-5 601 PUMP (MECHANICAL) 02-6-E06-5 601 PUMP (MECHANICAL) 02-6-E06-1 605 DEPRESSURIZATION VLV 02-6-E06-1 605 DEPRESSURIZATION VLV 02-6-E06-1 605 DEPRESSURIZATION VLV 02-6-E06-1 606 DEPRESSURIZATION VLV 02-6-E06-3 608 DEPRESSURIZATION VLV 02-6-SYSTEM-2 607 DEPRESSURIZATION VLV 02-6-SYSTEM-2 609 PRESSURIZATION VLV 02-6-SYSTEM-2 609 PRESSURIZATION VLV 02-6-SYSTEM-2 609 PRESSURIZATION VLV 02-6-E06-3 608 DEPRESSURIZATION VLV 02-6-E06-5 610 PRESSURE COMPENSATOR 02-6-E06-3 611 PRESSURE COMPENSATOR 02-6-E06-3 611 PRESSURE COMPENSATOR 02-6-E30-2 612 FLEX HOSE (SUCTION) 02-6-E30-2 614 FLEX HOSE (SUCTION) 02-6-SYSTEM-2 620 CHECK VALVE (SUPPLY) 02-6-E09-2 619 CHECK VALVE (SUPPLY) 02-6-E09-2 619 CHECK VALVE (SUPPLY) 02-6-E03-1 620 CHECK VALVE (SUPPLY) 02-6-E03-1 620 CHECK VALVE (SUPPLY) 02-6-E03-1 620 HYDRAULIC RESERVOIR INTERNAL LEAKAGE 02-6-SYSTEM-2 629 LOW PRESSURE RELIEF FAILS TO CLOSE 02-6-SYSTEM-2 629 LOW PRESSURE RELIEF FAILS TO CLOSE 02-6-SYSTEM-2 631 CHECK VALVE (CASE) 02-6-SYSTEM-2 632 HORIZONTAL/BLEED SAMP 02-6-C05-1 644 E.T. UMBILICAL RETRAC 02-6-SYSTEM-2 631 VERTICAL/BLEED SAMP 02-6-C05-1 644 E.T. UMBILICAL RETRAC 02-6-C05-1 644 E.T. UMBILICAL RETRAC 02-6-C05-1 644 E.T. UMBILICAL RETRAC 02-6-C05-1 646 E.T. UMBILICAL RETRAC 02-6-C05-1 646 E.T. UMBILICAL RETRAC 02-6-C05-1 646 E.T. UMBILICAL RETRAC 02-6-C05-1 646 E.T. UMBILICAL RETRAC 02-6-C05-1 646 E.T. UMBILICAL RETRAC 02-6-C05-1 646 E.T. UMBILICAL RETRAC 02-6-C05-1 646 E.T. UMBILICAL RETRAC 02-6-C05-1 646 E.T. UMBILICAL RETRAC 02-6-C05-1 646 E.T. UMBILICAL RETRAC 02-6-C05-1 646 E.T. UMBILICAL RETRAC 02-6-C05-1 646 E.T. UMBILICAL RETRAC 02-6-C05-1 646 E.T. UMBILICAL RETRAC 02-6-C05-1 646 E.T. UMBILICAL RETRAC 02-6-C05-1 646 E.T. UMBILICAL RETRAC 02-6-C05-1 646 E.T. UMBILICAL RETRAC 02-6-C05-1 646 E.T. UMBILICAL RETRAC 02-6-C05-1 646 E.	02-6-G14-1	490	RESTRICTOR, HYDRAULIC	BLOCKED
02-6-G02-2 494 LANDING GEAR CONTROL 02-6-A06-1 495 MPS/TVC SHUTOFF VALVE 02-6-A06-2 496 MPS/TVC SHUTOFF VALVE 02-6-A06-3 497 MPS/TVC SHUTOFF VALVE 02-6-SYSTEM-2 498 MPS/TVC SHUTOFF VALVE 02-6-SYSTEM-2 600 PUMP (MECHANICAL) 02-6-E06-5 601 PUMP (MECHANICAL) 02-6-E06-5 601 PUMP (MECHANICAL) 02-6-E06-1 605 DEPRESSURIZATION VLV 02-6-E06-1 605 DEPRESSURIZATION VLV 02-6-E06-1 605 DEPRESSURIZATION VLV 02-6-E06-1 606 DEPRESSURIZATION VLV 02-6-E06-3 608 DEPRESSURIZATION VLV 02-6-SYSTEM-2 607 DEPRESSURIZATION VLV 02-6-SYSTEM-2 609 PRESSURIZATION VLV 02-6-SYSTEM-2 609 PRESSURIZATION VLV 02-6-SYSTEM-2 609 PRESSURIZATION VLV 02-6-E06-3 608 DEPRESSURIZATION VLV 02-6-E06-5 610 PRESSURE COMPENSATOR 02-6-E06-3 611 PRESSURE COMPENSATOR 02-6-E06-3 611 PRESSURE COMPENSATOR 02-6-E30-2 612 FLEX HOSE (SUCTION) 02-6-E30-2 614 FLEX HOSE (SUCTION) 02-6-SYSTEM-2 620 CHECK VALVE (SUPPLY) 02-6-E09-2 619 CHECK VALVE (SUPPLY) 02-6-E09-2 619 CHECK VALVE (SUPPLY) 02-6-E03-1 620 CHECK VALVE (SUPPLY) 02-6-E03-1 620 CHECK VALVE (SUPPLY) 02-6-E03-1 620 HYDRAULIC RESERVOIR INTERNAL LEAKAGE 02-6-SYSTEM-2 629 LOW PRESSURE RELIEF FAILS TO CLOSE 02-6-SYSTEM-2 629 LOW PRESSURE RELIEF FAILS TO CLOSE 02-6-SYSTEM-2 631 CHECK VALVE (CASE) 02-6-SYSTEM-2 632 HORIZONTAL/BLEED SAMP 02-6-C05-1 644 E.T. UMBILICAL RETRAC 02-6-SYSTEM-2 631 VERTICAL/BLEED SAMP 02-6-C05-1 644 E.T. UMBILICAL RETRAC 02-6-C05-1 644 E.T. UMBILICAL RETRAC 02-6-C05-1 644 E.T. UMBILICAL RETRAC 02-6-C05-1 646 E.T. UMBILICAL RETRAC 02-6-C05-1 646 E.T. UMBILICAL RETRAC 02-6-C05-1 646 E.T. UMBILICAL RETRAC 02-6-C05-1 646 E.T. UMBILICAL RETRAC 02-6-C05-1 646 E.T. UMBILICAL RETRAC 02-6-C05-1 646 E.T. UMBILICAL RETRAC 02-6-C05-1 646 E.T. UMBILICAL RETRAC 02-6-C05-1 646 E.T. UMBILICAL RETRAC 02-6-C05-1 646 E.T. UMBILICAL RETRAC 02-6-C05-1 646 E.T. UMBILICAL RETRAC 02-6-C05-1 646 E.T. UMBILICAL RETRAC 02-6-C05-1 646 E.T. UMBILICAL RETRAC 02-6-C05-1 646 E.T. UMBILICAL RETRAC 02-6-C05-1 646 E.T. UMBILICAL RETRAC 02-6-C05-1 646 E.T. UMBILICAL RETRAC 02-6-C05-1 646 E.T. UMBILICAL RETRAC 02-6-C05-1 646 E.	02-6-G02-1	491	LANDING GEAR CONTROL	FAILS TO SWITCH
02-6-E06-1 606 DEPRESSURIZATION VLV PHYSICAL BINDING 02-6-SYSTEM-2 607 DEPRESSURIZATION VLV SHORTED 02-6-E06-3 608 DEPRESSURIZATION VLV SHORTED 02-6-E06-5 610 PRESSURE COMPENSATOR STRUCTURAL FAILURE 02-6-E06-3 611 PRESSURE COMPENSATOR FAILS TO MAXIMUM 02-6-E30-2 612 FLEX HOSE (SUCTION) STRUCTURAL FAILURE 02-6-E30-2 613 FLEX HOSE (SUCTION) STRUCTURAL FAILURE 02-6-E30-2 614 FLEX HOSE (CASE) STRUCTURAL FAILURE 02-6-E09-2 619 CHECK VALVE (SUPPLY) STRUCTURAL FAILURE 02-6-SYSTEM-2 620 CHECK VALVE (SUPPLY) EXTERNAL LEAKAGE 02-6-SYSTEM-2 623 CHECK VALVE (CASE) EXTERNAL LEAKAGE 02-6-E03-1 626 HYDRAULIC RESERVOIR STRUCTURAL FAILURE 02-6-E03-1 627 HYDRAULIC RESERVOIR STRUCTURAL FAILURE 02-6-E03-1 630 LOW PRESSURE RELIEF FAILS TO CLOSE 02-6-E03-1 631 LOW PRESSURE RELIEF FAILS TO CLOSE 02-6-E03-1 631 LOW PRESSURE RELIEF FAILS TO CLOSE 02-6-E03-1 631 LOW PRESSURE RELIEF FAILS TO CLOSE 02-6-E03-1 631 LOW PRESSURE RELIEF STAILS TO CLOSE 02-6-E03-1 644 E.T. UMBILICAL RETRAC 02-6-C05-1 644 E.T. UMBILICAL RETRAC COMPANDED SAMPLE EXTERNAL LEAKAGE 02-6-C05-1 644 E.T. UMBILICAL RETRAC PHYSICAL BINDING 02-6-C05-4 646 E.T. UMBILICAL RETRAC PHYSICAL BINDING 02-6-C09-1 670 FLEX HOSE & SWIVEL EXTERNAL LEAKAGE EXTERNAL LEAKAGE 02-6-C09-1 670 FLEX HOSE & SWIVEL EXTERNAL LEAKAGE EXTERNAL LEAKAGE 02-6-C09-1 670 FLEX HOSE & SWIVEL EXTERNAL LEAKAGE 02-6-SYSTEM-2 671 CHECK VALVE EXTERNAL LEAKAGE 02-6-SYSTEM-2 677 MANUAL DRAIN VALVE EXTERNAL LEAKAGE 02-6-SYSTEM-2 677 MANUAL DRAIN VALVE EXTERNAL LEAKAGE	02-6-G02-2	492	LANDING GEAR CONTROL	PREMATURE SWITCH
02-6-E06-1 606 DEPRESSURIZATION VLV PHYSICAL BINDING 02-6-SYSTEM-2 607 DEPRESSURIZATION VLV SHORTED 02-6-E06-3 608 DEPRESSURIZATION VLV SHORTED 02-6-E06-5 610 PRESSURE COMPENSATOR STRUCTURAL FAILURE 02-6-E06-3 611 PRESSURE COMPENSATOR FAILS TO MAXIMUM 02-6-E30-2 612 FLEX HOSE (SUCTION) STRUCTURAL FAILURE 02-6-E30-2 613 FLEX HOSE (SUCTION) STRUCTURAL FAILURE 02-6-E30-2 614 FLEX HOSE (CASE) STRUCTURAL FAILURE 02-6-E09-2 619 CHECK VALVE (SUPPLY) STRUCTURAL FAILURE 02-6-SYSTEM-2 620 CHECK VALVE (SUPPLY) EXTERNAL LEAKAGE 02-6-SYSTEM-2 623 CHECK VALVE (CASE) EXTERNAL LEAKAGE 02-6-E03-1 626 HYDRAULIC RESERVOIR STRUCTURAL FAILURE 02-6-E03-1 627 HYDRAULIC RESERVOIR STRUCTURAL FAILURE 02-6-E03-1 630 LOW PRESSURE RELIEF FAILS TO CLOSE 02-6-E03-1 631 LOW PRESSURE RELIEF FAILS TO CLOSE 02-6-E03-1 631 LOW PRESSURE RELIEF FAILS TO CLOSE 02-6-E03-1 631 LOW PRESSURE RELIEF FAILS TO CLOSE 02-6-E03-1 631 LOW PRESSURE RELIEF STAILS TO CLOSE 02-6-E03-1 644 E.T. UMBILICAL RETRAC 02-6-C05-1 644 E.T. UMBILICAL RETRAC COMPANDED SAMPLE EXTERNAL LEAKAGE 02-6-C05-1 644 E.T. UMBILICAL RETRAC PHYSICAL BINDING 02-6-C05-4 646 E.T. UMBILICAL RETRAC PHYSICAL BINDING 02-6-C09-1 670 FLEX HOSE & SWIVEL EXTERNAL LEAKAGE EXTERNAL LEAKAGE 02-6-C09-1 670 FLEX HOSE & SWIVEL EXTERNAL LEAKAGE EXTERNAL LEAKAGE 02-6-C09-1 670 FLEX HOSE & SWIVEL EXTERNAL LEAKAGE 02-6-SYSTEM-2 671 CHECK VALVE EXTERNAL LEAKAGE 02-6-SYSTEM-2 677 MANUAL DRAIN VALVE EXTERNAL LEAKAGE 02-6-SYSTEM-2 677 MANUAL DRAIN VALVE EXTERNAL LEAKAGE	02-6-SYSTEM-2	494	LANDING GEAR CONTROL	EXTERNAL LEAK
02-6-E06-1 606 DEPRESSURIZATION VLV PHYSICAL BINDING 02-6-SYSTEM-2 607 DEPRESSURIZATION VLV SHORTED 02-6-E06-3 608 DEPRESSURIZATION VLV SHORTED 02-6-E06-5 610 PRESSURE COMPENSATOR STRUCTURAL FAILURE 02-6-E06-3 611 PRESSURE COMPENSATOR FAILS TO MAXIMUM 02-6-E30-2 612 FLEX HOSE (SUCTION) STRUCTURAL FAILURE 02-6-E30-2 613 FLEX HOSE (SUCTION) STRUCTURAL FAILURE 02-6-E30-2 614 FLEX HOSE (CASE) STRUCTURAL FAILURE 02-6-E09-2 619 CHECK VALVE (SUPPLY) STRUCTURAL FAILURE 02-6-SYSTEM-2 620 CHECK VALVE (SUPPLY) EXTERNAL LEAKAGE 02-6-SYSTEM-2 623 CHECK VALVE (CASE) EXTERNAL LEAKAGE 02-6-E03-1 626 HYDRAULIC RESERVOIR STRUCTURAL FAILURE 02-6-E03-1 627 HYDRAULIC RESERVOIR STRUCTURAL FAILURE 02-6-E03-1 630 LOW PRESSURE RELIEF FAILS TO CLOSE 02-6-E03-1 631 LOW PRESSURE RELIEF FAILS TO CLOSE 02-6-E03-1 631 LOW PRESSURE RELIEF FAILS TO CLOSE 02-6-E03-1 631 LOW PRESSURE RELIEF FAILS TO CLOSE 02-6-E03-1 631 LOW PRESSURE RELIEF STAILS TO CLOSE 02-6-E03-1 644 E.T. UMBILICAL RETRAC 02-6-C05-1 644 E.T. UMBILICAL RETRAC COMPANDED SAMPLE EXTERNAL LEAKAGE 02-6-C05-1 644 E.T. UMBILICAL RETRAC PHYSICAL BINDING 02-6-C05-4 646 E.T. UMBILICAL RETRAC PHYSICAL BINDING 02-6-C09-1 670 FLEX HOSE & SWIVEL EXTERNAL LEAKAGE EXTERNAL LEAKAGE 02-6-C09-1 670 FLEX HOSE & SWIVEL EXTERNAL LEAKAGE EXTERNAL LEAKAGE 02-6-C09-1 670 FLEX HOSE & SWIVEL EXTERNAL LEAKAGE 02-6-SYSTEM-2 671 CHECK VALVE EXTERNAL LEAKAGE 02-6-SYSTEM-2 677 MANUAL DRAIN VALVE EXTERNAL LEAKAGE 02-6-SYSTEM-2 677 MANUAL DRAIN VALVE EXTERNAL LEAKAGE	02-6-A06-1	495	MPS/TVC SHUTOFF VALVE	FAILS TO TRANSFER
02-6-E06-1 606 DEPRESSURIZATION VLV PHYSICAL BINDING 02-6-SYSTEM-2 607 DEPRESSURIZATION VLV SHORTED 02-6-E06-3 608 DEPRESSURIZATION VLV SHORTED 02-6-E06-5 610 PRESSURE COMPENSATOR STRUCTURAL FAILURE 02-6-E06-3 611 PRESSURE COMPENSATOR FAILS TO MAXIMUM 02-6-E30-2 612 FLEX HOSE (SUCTION) STRUCTURAL FAILURE 02-6-E30-2 613 FLEX HOSE (SUCTION) STRUCTURAL FAILURE 02-6-E30-2 614 FLEX HOSE (CASE) STRUCTURAL FAILURE 02-6-E09-2 619 CHECK VALVE (SUPPLY) STRUCTURAL FAILURE 02-6-SYSTEM-2 620 CHECK VALVE (SUPPLY) EXTERNAL LEAKAGE 02-6-SYSTEM-2 623 CHECK VALVE (CASE) EXTERNAL LEAKAGE 02-6-E03-1 626 HYDRAULIC RESERVOIR STRUCTURAL FAILURE 02-6-E03-1 627 HYDRAULIC RESERVOIR STRUCTURAL FAILURE 02-6-E03-1 630 LOW PRESSURE RELIEF FAILS TO CLOSE 02-6-E03-1 631 LOW PRESSURE RELIEF FAILS TO CLOSE 02-6-E03-1 631 LOW PRESSURE RELIEF FAILS TO CLOSE 02-6-E03-1 631 LOW PRESSURE RELIEF FAILS TO CLOSE 02-6-E03-1 631 LOW PRESSURE RELIEF STAILS TO CLOSE 02-6-E03-1 644 E.T. UMBILICAL RETRAC 02-6-C05-1 644 E.T. UMBILICAL RETRAC COMPANDED SAMPLE EXTERNAL LEAKAGE 02-6-C05-1 644 E.T. UMBILICAL RETRAC PHYSICAL BINDING 02-6-C05-4 646 E.T. UMBILICAL RETRAC PHYSICAL BINDING 02-6-C09-1 670 FLEX HOSE & SWIVEL EXTERNAL LEAKAGE EXTERNAL LEAKAGE 02-6-C09-1 670 FLEX HOSE & SWIVEL EXTERNAL LEAKAGE EXTERNAL LEAKAGE 02-6-C09-1 670 FLEX HOSE & SWIVEL EXTERNAL LEAKAGE 02-6-SYSTEM-2 671 CHECK VALVE EXTERNAL LEAKAGE 02-6-SYSTEM-2 677 MANUAL DRAIN VALVE EXTERNAL LEAKAGE 02-6-SYSTEM-2 677 MANUAL DRAIN VALVE EXTERNAL LEAKAGE	02-6-A06-2	496	MPS/TVC SHUTOFF VALVE	PREMATURE TRANSFER
02-6-E06-1 606 DEPRESSURIZATION VLV PHYSICAL BINDING 02-6-SYSTEM-2 607 DEPRESSURIZATION VLV SHORTED 02-6-E06-3 608 DEPRESSURIZATION VLV SHORTED 02-6-E06-5 610 PRESSURE COMPENSATOR STRUCTURAL FAILURE 02-6-E06-3 611 PRESSURE COMPENSATOR FAILS TO MAXIMUM 02-6-E30-2 612 FLEX HOSE (SUCTION) STRUCTURAL FAILURE 02-6-E30-2 613 FLEX HOSE (SUCTION) STRUCTURAL FAILURE 02-6-E30-2 614 FLEX HOSE (CASE) STRUCTURAL FAILURE 02-6-E09-2 619 CHECK VALVE (SUPPLY) STRUCTURAL FAILURE 02-6-SYSTEM-2 620 CHECK VALVE (SUPPLY) EXTERNAL LEAKAGE 02-6-SYSTEM-2 623 CHECK VALVE (CASE) EXTERNAL LEAKAGE 02-6-E03-1 626 HYDRAULIC RESERVOIR STRUCTURAL FAILURE 02-6-E03-1 627 HYDRAULIC RESERVOIR STRUCTURAL FAILURE 02-6-E03-1 630 LOW PRESSURE RELIEF FAILS TO CLOSE 02-6-E03-1 631 LOW PRESSURE RELIEF FAILS TO CLOSE 02-6-E03-1 631 LOW PRESSURE RELIEF FAILS TO CLOSE 02-6-E03-1 631 LOW PRESSURE RELIEF FAILS TO CLOSE 02-6-E03-1 631 LOW PRESSURE RELIEF STAILS TO CLOSE 02-6-E03-1 644 E.T. UMBILICAL RETRAC 02-6-C05-1 644 E.T. UMBILICAL RETRAC COMPANDED SAMPLE EXTERNAL LEAKAGE 02-6-C05-1 644 E.T. UMBILICAL RETRAC PHYSICAL BINDING 02-6-C05-4 646 E.T. UMBILICAL RETRAC PHYSICAL BINDING 02-6-C09-1 670 FLEX HOSE & SWIVEL EXTERNAL LEAKAGE EXTERNAL LEAKAGE 02-6-C09-1 670 FLEX HOSE & SWIVEL EXTERNAL LEAKAGE EXTERNAL LEAKAGE 02-6-C09-1 670 FLEX HOSE & SWIVEL EXTERNAL LEAKAGE 02-6-SYSTEM-2 671 CHECK VALVE EXTERNAL LEAKAGE 02-6-SYSTEM-2 677 MANUAL DRAIN VALVE EXTERNAL LEAKAGE 02-6-SYSTEM-2 677 MANUAL DRAIN VALVE EXTERNAL LEAKAGE	02-6-A06-3	497	MPS/TVC SHUTOFF VALVE	FAILS TO TRANSFER
02-6-E06-1 606 DEPRESSURIZATION VLV PHYSICAL BINDING 02-6-SYSTEM-2 607 DEPRESSURIZATION VLV SHORTED 02-6-E06-3 608 DEPRESSURIZATION VLV SHORTED 02-6-E06-5 610 PRESSURE COMPENSATOR STRUCTURAL FAILURE 02-6-E06-3 611 PRESSURE COMPENSATOR FAILS TO MAXIMUM 02-6-E30-2 612 FLEX HOSE (SUCTION) STRUCTURAL FAILURE 02-6-E30-2 613 FLEX HOSE (SUCTION) STRUCTURAL FAILURE 02-6-E30-2 614 FLEX HOSE (CASE) STRUCTURAL FAILURE 02-6-E09-2 619 CHECK VALVE (SUPPLY) STRUCTURAL FAILURE 02-6-SYSTEM-2 620 CHECK VALVE (SUPPLY) EXTERNAL LEAKAGE 02-6-SYSTEM-2 623 CHECK VALVE (CASE) EXTERNAL LEAKAGE 02-6-E03-1 626 HYDRAULIC RESERVOIR STRUCTURAL FAILURE 02-6-E03-1 627 HYDRAULIC RESERVOIR STRUCTURAL FAILURE 02-6-E03-1 630 LOW PRESSURE RELIEF FAILS TO CLOSE 02-6-E03-1 631 LOW PRESSURE RELIEF FAILS TO CLOSE 02-6-E03-1 631 LOW PRESSURE RELIEF FAILS TO CLOSE 02-6-E03-1 631 LOW PRESSURE RELIEF FAILS TO CLOSE 02-6-E03-1 631 LOW PRESSURE RELIEF STAILS TO CLOSE 02-6-E03-1 644 E.T. UMBILICAL RETRAC 02-6-C05-1 644 E.T. UMBILICAL RETRAC COMPANDED SAMPLE EXTERNAL LEAKAGE 02-6-C05-1 644 E.T. UMBILICAL RETRAC PHYSICAL BINDING 02-6-C05-4 646 E.T. UMBILICAL RETRAC PHYSICAL BINDING 02-6-C09-1 670 FLEX HOSE & SWIVEL EXTERNAL LEAKAGE EXTERNAL LEAKAGE 02-6-C09-1 670 FLEX HOSE & SWIVEL EXTERNAL LEAKAGE EXTERNAL LEAKAGE 02-6-C09-1 670 FLEX HOSE & SWIVEL EXTERNAL LEAKAGE 02-6-SYSTEM-2 671 CHECK VALVE EXTERNAL LEAKAGE 02-6-SYSTEM-2 677 MANUAL DRAIN VALVE EXTERNAL LEAKAGE 02-6-SYSTEM-2 677 MANUAL DRAIN VALVE EXTERNAL LEAKAGE	02-6-SYSTEM-2	498	MPS/TVC SHUTOFF VALVE	EXTERNAL LEAK
02-6-E06-1 606 DEPRESSURIZATION VLV PHYSICAL BINDING 02-6-SYSTEM-2 607 DEPRESSURIZATION VLV SHORTED 02-6-E06-3 608 DEPRESSURIZATION VLV SHORTED 02-6-E06-5 610 PRESSURE COMPENSATOR STRUCTURAL FAILURE 02-6-E06-3 611 PRESSURE COMPENSATOR FAILS TO MAXIMUM 02-6-E30-2 612 FLEX HOSE (SUCTION) STRUCTURAL FAILURE 02-6-E30-2 613 FLEX HOSE (SUCTION) STRUCTURAL FAILURE 02-6-E30-2 614 FLEX HOSE (CASE) STRUCTURAL FAILURE 02-6-E09-2 619 CHECK VALVE (SUPPLY) STRUCTURAL FAILURE 02-6-SYSTEM-2 620 CHECK VALVE (SUPPLY) EXTERNAL LEAKAGE 02-6-SYSTEM-2 623 CHECK VALVE (CASE) EXTERNAL LEAKAGE 02-6-E03-1 626 HYDRAULIC RESERVOIR STRUCTURAL FAILURE 02-6-E03-1 627 HYDRAULIC RESERVOIR STRUCTURAL FAILURE 02-6-E03-1 630 LOW PRESSURE RELIEF FAILS TO CLOSE 02-6-E03-1 631 LOW PRESSURE RELIEF FAILS TO CLOSE 02-6-E03-1 631 LOW PRESSURE RELIEF FAILS TO CLOSE 02-6-E03-1 631 LOW PRESSURE RELIEF FAILS TO CLOSE 02-6-E03-1 631 LOW PRESSURE RELIEF STAILS TO CLOSE 02-6-E03-1 644 E.T. UMBILICAL RETRAC 02-6-C05-1 644 E.T. UMBILICAL RETRAC COMPANDED SAMPLE EXTERNAL LEAKAGE 02-6-C05-1 644 E.T. UMBILICAL RETRAC PHYSICAL BINDING 02-6-C05-4 646 E.T. UMBILICAL RETRAC PHYSICAL BINDING 02-6-C09-1 670 FLEX HOSE & SWIVEL EXTERNAL LEAKAGE EXTERNAL LEAKAGE 02-6-C09-1 670 FLEX HOSE & SWIVEL EXTERNAL LEAKAGE EXTERNAL LEAKAGE 02-6-C09-1 670 FLEX HOSE & SWIVEL EXTERNAL LEAKAGE 02-6-SYSTEM-2 671 CHECK VALVE EXTERNAL LEAKAGE 02-6-SYSTEM-2 677 MANUAL DRAIN VALVE EXTERNAL LEAKAGE 02-6-SYSTEM-2 677 MANUAL DRAIN VALVE EXTERNAL LEAKAGE	02-6-SYSTEM-2	600	PUMP (MECHANICAL)	STRUCTURAL FAILURE
02-6-E06-1 606 DEPRESSURIZATION VLV PHYSICAL BINDING 02-6-SYSTEM-2 607 DEPRESSURIZATION VLV SHORTED 02-6-E06-3 608 DEPRESSURIZATION VLV SHORTED 02-6-E06-5 610 PRESSURE COMPENSATOR STRUCTURAL FAILURE 02-6-E06-3 611 PRESSURE COMPENSATOR FAILS TO MAXIMUM 02-6-E30-2 612 FLEX HOSE (SUCTION) STRUCTURAL FAILURE 02-6-E30-2 613 FLEX HOSE (SUCTION) STRUCTURAL FAILURE 02-6-E30-2 614 FLEX HOSE (CASE) STRUCTURAL FAILURE 02-6-E09-2 619 CHECK VALVE (SUPPLY) STRUCTURAL FAILURE 02-6-SYSTEM-2 620 CHECK VALVE (SUPPLY) EXTERNAL LEAKAGE 02-6-SYSTEM-2 623 CHECK VALVE (CASE) EXTERNAL LEAKAGE 02-6-E03-1 626 HYDRAULIC RESERVOIR STRUCTURAL FAILURE 02-6-E03-1 627 HYDRAULIC RESERVOIR STRUCTURAL FAILURE 02-6-E03-1 630 LOW PRESSURE RELIEF FAILS TO CLOSE 02-6-E03-1 631 LOW PRESSURE RELIEF FAILS TO CLOSE 02-6-E03-1 631 LOW PRESSURE RELIEF FAILS TO CLOSE 02-6-E03-1 631 LOW PRESSURE RELIEF FAILS TO CLOSE 02-6-E03-1 631 LOW PRESSURE RELIEF STAILS TO CLOSE 02-6-E03-1 644 E.T. UMBILICAL RETRAC 02-6-C05-1 644 E.T. UMBILICAL RETRAC COMPANDED SAMPLE EXTERNAL LEAKAGE 02-6-C05-1 644 E.T. UMBILICAL RETRAC PHYSICAL BINDING 02-6-C05-4 646 E.T. UMBILICAL RETRAC PHYSICAL BINDING 02-6-C09-1 670 FLEX HOSE & SWIVEL EXTERNAL LEAKAGE EXTERNAL LEAKAGE 02-6-C09-1 670 FLEX HOSE & SWIVEL EXTERNAL LEAKAGE EXTERNAL LEAKAGE 02-6-C09-1 670 FLEX HOSE & SWIVEL EXTERNAL LEAKAGE 02-6-SYSTEM-2 671 CHECK VALVE EXTERNAL LEAKAGE 02-6-SYSTEM-2 677 MANUAL DRAIN VALVE EXTERNAL LEAKAGE 02-6-SYSTEM-2 677 MANUAL DRAIN VALVE EXTERNAL LEAKAGE	02-6-E06-5	601	PUMP (MECHANICAL)	PHYSICAL BINDING
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02-6-E03-5         624         HYDRAULIC RESERVOIR         STRUCTURAL FAILURE           02-6-E03-1         626         HYDRAULIC RESERVOIR         INTERNAL LEAKAGE           02-6-E03-1         627         HYDRAULIC RESERVOIR         INTERNAL LEAKAGE           02-6-E03-1         630         LOW PRESSURE RELIEF         FAILS TO CLOSE           02-6-E03-1         631         LOW PRESSURE RELIEF         EXTERNAL LEAKAGE           02-6-SYSTEM-2         632         HORIZONTAL/BLEED SAMP         EXTERNAL LEAKAGE           02-6-SYSTEM-2         633         VERTICAL/BLEED SAMPLE         EXTERNAL LEAKAGE           02-6-C05-1         643         E.T. UMBILICAL RETRAC         RUPTURE           02-6-C05-1         644         E.T. UMBILICAL RETRAC         EXTERNAL LEAKAGE           02-6-C05-3         646         E.T. UMBILICAL RETRAC         PHYSICAL BINDING           02-6-C05-4         646         E.T. UMBILICAL RETRAC         PHYSICAL BINDING           02-6-C09-1         669         FLEX HOSE & SWIVEL         EXTERNAL LEAKAGE           02-6-C09-1         670         FLEX HOSE & SWIVEL         EXTERNAL LEAKAGE           02-6-C10-2         671         CHECK VALVE         FAILS TO OPEN           02-6-SYSTEM-2         673         CHECK VALVE			FLEX HOSE (SUPPLI)	STRUCTURAL FATLURE
02-6-E03-5         624         HYDRAULIC RESERVOIR         STRUCTURAL FAILURE           02-6-E03-1         626         HYDRAULIC RESERVOIR         INTERNAL LEAKAGE           02-6-E03-1         627         HYDRAULIC RESERVOIR         INTERNAL LEAKAGE           02-6-E03-1         630         LOW PRESSURE RELIEF         FAILS TO CLOSE           02-6-E03-1         631         LOW PRESSURE RELIEF         EXTERNAL LEAKAGE           02-6-SYSTEM-2         632         HORIZONTAL/BLEED SAMP         EXTERNAL LEAKAGE           02-6-SYSTEM-2         633         VERTICAL/BLEED SAMPLE         EXTERNAL LEAKAGE           02-6-C05-1         643         E.T. UMBILICAL RETRAC         RUPTURE           02-6-C05-1         644         E.T. UMBILICAL RETRAC         EXTERNAL LEAKAGE           02-6-C05-3         646         E.T. UMBILICAL RETRAC         PHYSICAL BINDING           02-6-C05-4         646         E.T. UMBILICAL RETRAC         PHYSICAL BINDING           02-6-C09-1         669         FLEX HOSE & SWIVEL         EXTERNAL LEAKAGE           02-6-C09-1         670         FLEX HOSE & SWIVEL         EXTERNAL LEAKAGE           02-6-C10-2         671         CHECK VALVE         FAILS TO OPEN           02-6-SYSTEM-2         673         CHECK VALVE	02-6-E30-2	610	CUECK WAINE (CHOE)	FATIS TO CLOSE
02-6-E03-5         624         HYDRAULIC RESERVOIR         STRUCTURAL FAILURE           02-6-E03-1         626         HYDRAULIC RESERVOIR         INTERNAL LEAKAGE           02-6-E03-1         627         HYDRAULIC RESERVOIR         INTERNAL LEAKAGE           02-6-E03-1         630         LOW PRESSURE RELIEF         FAILS TO CLOSE           02-6-E03-1         631         LOW PRESSURE RELIEF         EXTERNAL LEAKAGE           02-6-SYSTEM-2         632         HORIZONTAL/BLEED SAMP         EXTERNAL LEAKAGE           02-6-SYSTEM-2         633         VERTICAL/BLEED SAMPLE         EXTERNAL LEAKAGE           02-6-C05-1         643         E.T. UMBILICAL RETRAC         RUPTURE           02-6-C05-1         644         E.T. UMBILICAL RETRAC         EXTERNAL LEAKAGE           02-6-C05-3         646         E.T. UMBILICAL RETRAC         PHYSICAL BINDING           02-6-C05-4         646         E.T. UMBILICAL RETRAC         PHYSICAL BINDING           02-6-C09-1         669         FLEX HOSE & SWIVEL         EXTERNAL LEAKAGE           02-6-C09-1         670         FLEX HOSE & SWIVEL         EXTERNAL LEAKAGE           02-6-C10-2         671         CHECK VALVE         FAILS TO OPEN           02-6-SYSTEM-2         673         CHECK VALVE	02-6-E09-2	619	CHECK VALVE (SUPPLY)	EXTERNAL LEAKAGE
02-6-E03-5         624         HYDRAULIC RESERVOIR         STRUCTURAL FAILURE           02-6-E03-1         626         HYDRAULIC RESERVOIR         INTERNAL LEAKAGE           02-6-E03-1         627         HYDRAULIC RESERVOIR         INTERNAL LEAKAGE           02-6-E03-1         630         LOW PRESSURE RELIEF         FAILS TO CLOSE           02-6-E03-1         631         LOW PRESSURE RELIEF         EXTERNAL LEAKAGE           02-6-SYSTEM-2         632         HORIZONTAL/BLEED SAMP         EXTERNAL LEAKAGE           02-6-SYSTEM-2         633         VERTICAL/BLEED SAMPLE         EXTERNAL LEAKAGE           02-6-C05-1         643         E.T. UMBILICAL RETRAC         RUPTURE           02-6-C05-1         644         E.T. UMBILICAL RETRAC         EXTERNAL LEAKAGE           02-6-C05-3         646         E.T. UMBILICAL RETRAC         PHYSICAL BINDING           02-6-C05-4         646         E.T. UMBILICAL RETRAC         PHYSICAL BINDING           02-6-C09-1         669         FLEX HOSE & SWIVEL         EXTERNAL LEAKAGE           02-6-C09-1         670         FLEX HOSE & SWIVEL         EXTERNAL LEAKAGE           02-6-C10-2         671         CHECK VALVE         FAILS TO OPEN           02-6-SYSTEM-2         673         CHECK VALVE	02-6-SISIEM-2	620	CHECK VALVE (CASE)	EXTERNAL LEAKAGE
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02-6-SYSTEM-2 632 HORIZONTAL/BLEED SAMP EXTERNAL LEAKAGE 02-6-SYSTEM-2 633 VERTICAL/BLEED SAMPLE EXTERNAL LEAKAGE 02-6-C05-1 643 E.T. UMBILICAL RETRAC RUPTURE 02-6-C05-1 644 E.T. UMBILICAL RETRAC EXTERNAL LEAKAGE 02-6-C05-3 646 E.T. UMBILICAL RETRAC PHYSICAL BINDING 02-6-C05-4 646 E.T. UMBILICAL RETRAC PHYSICAL BINDING 02-6-C09-1 669 FLEX HOSE & SWIVEL EXTERNAL LEAKAGE 02-6-C09-1 670 FLEX HOSE & SWIVEL EXTERNAL LEAKAGE 02-6-C10-2 671 CHECK VALVE FAILS TO OPEN 02-6-SYSTEM-2 673 CHECK VALVE EXTERNAL LEAKAGE	02-6-E03-3	626	HYDRAULIC RESERVOIR	INTERNAL LEAKAGE
02-6-SYSTEM-2 632 HORIZONTAL/BLEED SAMP EXTERNAL LEAKAGE 02-6-SYSTEM-2 633 VERTICAL/BLEED SAMPLE EXTERNAL LEAKAGE 02-6-C05-1 643 E.T. UMBILICAL RETRAC RUPTURE 02-6-C05-1 644 E.T. UMBILICAL RETRAC EXTERNAL LEAKAGE 02-6-C05-3 646 E.T. UMBILICAL RETRAC PHYSICAL BINDING 02-6-C05-4 646 E.T. UMBILICAL RETRAC PHYSICAL BINDING 02-6-C09-1 669 FLEX HOSE & SWIVEL EXTERNAL LEAKAGE 02-6-C09-1 670 FLEX HOSE & SWIVEL EXTERNAL LEAKAGE 02-6-C10-2 671 CHECK VALVE FAILS TO OPEN 02-6-SYSTEM-2 673 CHECK VALVE EXTERNAL LEAKAGE	02-6-E03-1	627	HYDRAULIC RESERVOIR	INTERNAL LEAKAGE
02-6-SYSTEM-2 632 HORIZONTAL/BLEED SAMP EXTERNAL LEAKAGE 02-6-SYSTEM-2 633 VERTICAL/BLEED SAMPLE EXTERNAL LEAKAGE 02-6-C05-1 643 E.T. UMBILICAL RETRAC RUPTURE 02-6-C05-1 644 E.T. UMBILICAL RETRAC EXTERNAL LEAKAGE 02-6-C05-3 646 E.T. UMBILICAL RETRAC PHYSICAL BINDING 02-6-C05-4 646 E.T. UMBILICAL RETRAC PHYSICAL BINDING 02-6-C09-1 669 FLEX HOSE & SWIVEL EXTERNAL LEAKAGE 02-6-C09-1 670 FLEX HOSE & SWIVEL EXTERNAL LEAKAGE 02-6-C10-2 671 CHECK VALVE FAILS TO OPEN 02-6-SYSTEM-2 673 CHECK VALVE EXTERNAL LEAKAGE	02 6 E03 I	629	LOW PRESSURE RELIEF	FAILS TO CLOSE
02-6-SYSTEM-2 632 HORIZONTAL/BLEED SAMP EXTERNAL LEAKAGE 02-6-SYSTEM-2 633 VERTICAL/BLEED SAMPLE EXTERNAL LEAKAGE 02-6-C05-1 643 E.T. UMBILICAL RETRAC RUPTURE 02-6-C05-1 644 E.T. UMBILICAL RETRAC EXTERNAL LEAKAGE 02-6-C05-3 646 E.T. UMBILICAL RETRAC PHYSICAL BINDING 02-6-C05-4 646 E.T. UMBILICAL RETRAC PHYSICAL BINDING 02-6-C09-1 669 FLEX HOSE & SWIVEL EXTERNAL LEAKAGE 02-6-C09-1 670 FLEX HOSE & SWIVEL EXTERNAL LEAKAGE 02-6-C10-2 671 CHECK VALVE FAILS TO OPEN 02-6-SYSTEM-2 673 CHECK VALVE EXTERNAL LEAKAGE	02-6-E03-1	630	LOW PRESSURE RELIEF	INTERNAL LEAKAGE
02-6-SYSTEM-2 632 HORIZONTAL/BLEED SAMP EXTERNAL LEAKAGE 02-6-SYSTEM-2 633 VERTICAL/BLEED SAMPLE EXTERNAL LEAKAGE 02-6-C05-1 643 E.T. UMBILICAL RETRAC RUPTURE 02-6-C05-1 644 E.T. UMBILICAL RETRAC EXTERNAL LEAKAGE 02-6-C05-3 646 E.T. UMBILICAL RETRAC PHYSICAL BINDING 02-6-C05-4 646 E.T. UMBILICAL RETRAC PHYSICAL BINDING 02-6-C09-1 669 FLEX HOSE & SWIVEL EXTERNAL LEAKAGE 02-6-C09-1 670 FLEX HOSE & SWIVEL EXTERNAL LEAKAGE 02-6-C10-2 671 CHECK VALVE FAILS TO OPEN 02-6-SYSTEM-2 673 CHECK VALVE EXTERNAL LEAKAGE	02-6-E03-1	631	LOW PRESSURE RELIEF	EXTERNAL LEAKAGE
02-6-SYSTEM-2       633       VERTICAL/BLEED SAMPLE       EXTERNAL LEAKAGE         02-6-C05-1       643       E.T. UMBILICAL RETRAC       RUPTURE         02-6-C05-1       644       E.T. UMBILICAL RETRAC       EXTERNAL LEAKAGE         02-6-C05-3       646       E.T. UMBILICAL RETRAC       PHYSICAL BINDING         02-6-C05-4       646       E.T. UMBILICAL RETRAC       PHYSICAL BINDING         02-6-C09-1       669       FLEX HOSE & SWIVEL       EXTERNAL LEAKAGE         02-6-C09-1       670       FLEX HOSE & SWIVEL       EXTERNAL LEAKAGE         02-6-C10-2       671       CHECK VALVE       FAILS TO OPEN         02-6-SYSTEM-2       673       CHECK VALVE       EXTERNAL LEAKAGE         02-6-SYSTEM-2       677       MANUAL DRAIN VALVE       EXTERNAL LEAKAGE	02-6-SYSTEM-2			EXTERNAL LEAKAGE
02-6-C05-1       643       E.T. UMBILICAL RETRAC       RUPTURE         02-6-C05-1       644       E.T. UMBILICAL RETRAC       EXTERNAL LEAKAGE         02-6-C05-3       646       E.T. UMBILICAL RETRAC       PHYSICAL BINDING         02-6-C05-4       646       E.T. UMBILICAL RETRAC       PHYSICAL BINDING         02-6-C09-1       669       FLEX HOSE & SWIVEL       EXTERNAL LEAKAGE         02-6-C09-1       670       FLEX HOSE & SWIVEL       EXTERNAL LEAKAGE         02-6-C10-2       671       CHECK VALVE       FAILS TO OPEN         02-6-SYSTEM-2       673       CHECK VALVE       EXTERNAL LEAKAGE         02-6-SYSTEM-2       677       MANUAL DRAIN VALVE       EXTERNAL LEAKAGE	02-6-SYSTEM-2	633	VERTICAL/BLEED SAMPLE	EXTERNAL LEAKAGE
02-6-C05-1 644 E.T. UMBILICAL RETRAC EXTERNAL LEAKAGE 02-6-C05-3 646 E.T. UMBILICAL RETRAC PHYSICAL BINDING 02-6-C05-4 646 E.T. UMBILICAL RETRAC PHYSICAL BINDING 02-6-C09-1 669 FLEX HOSE & SWIVEL EXTERNAL LEAKAGE 02-6-C09-1 670 FLEX HOSE & SWIVEL EXTERNAL LEAKAGE 02-6-C10-2 671 CHECK VALVE FAILS TO OPEN 02-6-SYSTEM-2 673 CHECK VALVE EXTERNAL LEAKAGE 02-6-SYSTEM-2 677 MANUAL DRAIN VALVE EXTERNAL LEAKAGE	02-6-C05-1			RUPTURE
02-6-C05-3 646 E.T. UMBILICAL RETRAC PHYSICAL BINDING 02-6-C05-4 646 E.T. UMBILICAL RETRAC PHYSICAL BINDING 02-6-C09-1 669 FLEX HOSE & SWIVEL EXTERNAL LEAKAGE 02-6-C09-1 670 FLEX HOSE & SWIVEL EXTERNAL LEAKAGE 02-6-C10-2 671 CHECK VALVE FAILS TO OPEN 02-6-SYSTEM-2 673 CHECK VALVE EXTERNAL LEAKAGE 02-6-SYSTEM-2 677 MANUAL DRAIN VALVE EXTERNAL LEAKAGE			E.T. UMBILICAL RETRAC	EXTERNAL LEAKAGE
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02-6-C09-1       669       FLEX HOSE & SWIVEL       EXTERNAL LEAKAGE         02-6-C09-1       670       FLEX HOSE & SWIVEL       EXTERNAL LEAKAGE         02-6-C10-2       671       CHECK VALVE       FAILS TO OPEN         02-6-SYSTEM-2       673       CHECK VALVE       EXTERNAL LEAKAGE         02-6-SYSTEM-2       677       MANUAL DRAIN VALVE       EXTERNAL LEAKAGE		646	E.T. UMBILICAL RETRAC	
02-6-C10-2 671 CHECK VALVE FAILS TO OPEN 02-6-SYSTEM-2 673 CHECK VALVE EXTERNAL LEAKAGE 02-6-SYSTEM-2 677 MANUAL DRAIN VALVE EXTERNAL LEAKAGE		669	FLEX HOSE & SWIVEL	ATT AND AND AND AND AND AND AND AND AND AND
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	02-6-SYSTEM-2			
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02-6-SYSTEM-2 699 CIRCULATION PUMP CHECK STRUCTURAL FAILURE				
02-6-E10-2 704 CIRCULATION PUMP CHECK FAILS TO CLOSE				
02-6-SYSTEM-2 708 SUPPLY FILTER STRUCTURAL FAILURE	02-6-SYSTEM-2	708	SUPPLY FILTER	STRUCTURAL FAILURE

NASA FMEA	MDAC-ID	ITEM	FAILURE MODE
02-6-E08-2	709	SUPPLY FILTER	RESTRICTED FLOW
02-6-SYSTEM-2	713	RELIEF VALVE	STRUCTURAL FAILURE
02-6-E08-6	715	RELIEF VALVE	FAILS TO CLOSE
02-6-SYSTEM-2	719	CASE FILTER	EXTERNAL LEAKAGE
02-6-SYSTEM-2	721	RETURN FILTER	EXTERNAL LEAKAGE
02-6-E08-4	722	RETURN FILTER	RESTRICTED FLOW
	724	FREON/OIL HEAT EXCHANGE	INTERNAL LEAKAGE
02-6-SYSTEM-2	725	FREON/OIL HEAT EXCHANGE	
02-6-SYSTEM-2	730	THERMAL CONTROL VALVE	EXTERNAL LEAKAGE
05-6G-201000-1	814	MASTER EVENTS CONTROL	OPEN
05-6G-2080-2	848	HYBRID DRIVER	INADVERTENT OUTPUT
05-6G-2080-1	849	HYBRID DRIVER	LOSS OF OUTPUT
05-6G-2088-2	860	SWITCH, HYD MAIN PUMP	FAILS IN "NORM"
05-6G-2088-1	861	SWITCH, HYD MAIN PUMP	FAILS IN "LOW"
05-6G-200100-1J	872	BLOCKING DIODE (15A)	OPEN
05-6G-200100-1J	872	BLOCKING DIODE (15A)	OPEN
05-6G-2085-1	874	BLOCKING DIODE (12A)	OPEN
05-6G-200300-1A	877	LG RETRACT/CIRC VLV	FAILS IN "OPEN"
05-6G-2072-2	884	HYBRID DRIVER	CONTINUOUS OUTPUT
05-6G <b>-</b> 2071-2	886	HYBRID DRIVER	CONTINUOUS OUTPUT
05-6G-2068-3	891	MPS/TVC ISO VLV CONTR	INADVERTENT/PREMA
05-6G-2068-2	891	MPS/TVC ISO VLV CONTR	INADVERTENT/PREMA
05-6G-2064-2	899	CONTROLLER, HYBRID DR	INADVERTENT OUTPUT
05-6G-2056-1	901	CONTROLLER, HYBRID DR	LOSS OF OUTPUT
05-6G-2056-3	902	CONTROLLER, HYBRID DR	INADVERTENT OUTPUT
05-6G-2057-1	910	VEHICLE ISOLATION DIO	OPEN
05-6G-2055-3	911	LG HYDRAULIC ISOLATION	INADVERTENTLY CON
05-6G-2055-2	912	LG HYDRAULIC ISOLATION	INADVERTENTLY CON
06-3A-0633-1	1171	BLOW-OFF STEAM VENT	RESTRICTED FLOW
06-3A-0607-2	1441	GN2 REGULATOR VALVE	EXTERNAL LEAKAGE
05-6WA-2129-2	1761	BY-PASS RELAY	FAILS OPEN
05-6WA-2055-2	1841	SWITCH, "APU/HYD BOIL	SWITCH FAILS CLOSE
02-6-C06-2	5000	VALVE, CHECK	FAILS CLOSED
02-6-C06-2	5001	VALVE, CHECK	FAILS OPEN
05-6G-2078-1	8001	DIODE, SURGE SUPPR.	INTERNAL SHORT
05-6G-2086-1	8002	DIODE, ISOL	FAILS OPEN
05-6G-2087-1	8003	DIODE, ISOL (3A)	FAILS OPEN
05-6G-2095-2	8004	HYBRID DRIVER TYPE 4	INADVERTENT OUTPUT
05-6G-00100-1B		DIODE, HYD MN PUMP	OPEN (ELECTRICAL)
05-6G-200300-1K	8763	DIODE, GROUND ISOL	SHORT TO GROUND

#### APPENDIX E DETAILED ANALYSIS

This appendix contains the IOA analysis worksheets supplementing previous results reported in STSEOS Working Paper 1.0-WP-VA86001-20, Analysis of the Hydraulics/Water Spray Boiler Subsystem, (20 December 1987). Prior results were obtained independently and documented before starting the FMEA/CIL assessment activity. Supplemental analysis was performed to address failure modes not previously considered by the IOA. Each sheet identifies the hardware item being analyzed, parent assembly and function performed. For each failure mode possible causes are identified, and hardware and functional criticality for each mission phase are determined as described in NSTS 22206, Instructions for Preparation of FMEA and CIL, 10 October 1986. Failure mode effects are described at the bottom of each sheet and worst case criticality is identified at the top.

## LEGEND FOR IOA ANALYSIS WORKSHEETS

## Hardware Criticalities:

- 1 = Loss of life or vehicle
- 2 = Loss of mission or next failure of any redundant item
   (like or unlike) could cause loss of life/vehicle
- 3 = All others

#### Functional Criticalities:

- 1R = Redundant hardware items (like or unlike) all of which,
   if failed, could cause loss of life or vehicle.
- 2R = Redundant hardware items (like or unlike) all of which, if failed, could cause loss of mission.

#### Redundancy Screen A:

- 1 = Is Checked Out PreFlight
- 2 = Is Capable of Check Out PreFlight
- 3 = Not Capable of Check Out PreFlight
- NA = Not Applicable

### Redundancy Screens B and C:

- P = Passed Screen
- F = Failed Screen
- NA = Not Applicable

#### INDEPENDENT ORBITER ASSESSMENT ORBITER SUBSYSTEM ANALYSIS WORKSHEET

DATE:

2/08/88

HIGHEST CRITICALITY HDW/FUNC

SUBSYSTEM: HYD/WSB

FLIGHT:

2/1R

MDAC ID: 1171

ABORT:

2/1R

ITEM:

BLOW-OFF STEAM VENT PLUG

FAILURE MODE: RESTRICTED FLOW THROUGH STEAM DUMP NOZZLE

LEAD ANALYST: J. DUVAL SUBSYS LEAD: W. DAVIDSON

## BREAKDOWN HIERARCHY:

- 1) WATER SPRAY BOILER
- 2) WATER SPRAY BOILER ASSY
- 3) STEAM DUMP NOZZLE
- BLOW-OFF STEAM VENT PLUG 4)

5)

6)

7)

8) 9)

CRITICALITIES

FLIGHT PHASE	HDW/FUNC	ABORT	HDW/FUNC
PRELAUNCH:	/NA	RTLS:	2/1R
LIFTOFF:	2/1R	TAL:	2/1R
ONORBIT:	2/1R	AOA:	2/1R
DEORBIT:	2/1R	ATO:	2/1R
LANDING/SAFING:	2/1R		

REDUNDANCY SCREENS: A [ 3 ] B [ P ] C [ P ]

LOCATION: 50V58NZ1(VS70-580999B)

PART NUMBER:

CAUSES: VENT PLUG STUCK OR INJESTED BLOW-OFF STEAM

EFFECTS/RATIONALE:

DURING BOILER OPERATION THE STEAM WOULD HAVE NO ESCAPE ROUTE, ACTIVATING THE STEAM VENT RELIEF VALVE. LOSS OF SYSTEM.

REFERENCES: VS70-580999B, SPACE SHUTTLE SYSTEMS HANDBOOK, VOL II, SECT 12

## INDEPENDENT ORBITER ASSESSMENT ORBITER SUBSYSTEM ANALYSIS WORKSHEET

DATE: 2/09/88 HIGHEST CRITICALITY HDW/FUNC

SUBSYSTEM: HYD/WSB FLIGHT: 2/1R MDAC ID: 1441 ABORT: 2/1R

ITEM: GN2 REGULATOR VALVE FAILURE MODE: EXTERNAL LEAKAGE

LEAD ANALYST: W. DAVIDSON SUBSYS LEAD: W. DAVIDSON

#### BREAKDOWN HIERARCHY:

- 1) WATER SPRAY BOILER
- 2) GN2 SYSTEM
- 3) GN2 REGULATOR VALVE
- 4)
- 5)
- 6)
- 7)
- 8) 9)

#### CRITICALITIES

FLIGHT PHASE	HDW/FUNC	ABORT	HDW/FUNC	
PRELAUNCH:	/NA	RTLS:	2/1R	
LIFTOFF:	2/1R	TAL:	2/1R	
ONORBIT:	2/1R	AOA:	2/1R	
DEORBIT:	2/1R	ATO:	2/1R	
LANDING/SAFING:	2/1R			

REDUNDANCY SCREENS: A [ 1 ] B [ P ] C [ P ]

LOCATION:

50V58HX4 (VS70-580999B)

PART NUMBER:

CAUSES: VIBRATION, MECHANICAL SHOCK, PIECE-PART FAILURE

EFFECTS/RATIONALE:

LOSS OF GN2 PREVENTS EXPULSION OF H2O TO THE BOILER RESULTING IN THE LOSS OF COOLING AND THE SYSTEM.

REFERENCES: VS70-580999B, SPACE SHUTTLE SYSTEMS HANDBOOK, VOL II, SECT 12

## INDEPENDENT ORBITER ASSESSMENT ORBITER SUBSYSTEM ANALYSIS WORKSHEET

DATE: 1/26/88 HIGHEST CRITICALITY HDW/FUNC SUBSYSTEM: HYD/WSB FLIGHT: 3/3\_

MDAC ID: 1751 ABORT: 3/3

ITEM: CE

FAILURE MODE: CB FAILS CLOSED, CANNOT BE OPENED

LEAD ANALYST: W. DAVIDSON SUBSYS LEAD: W. DAVIDSON

#### BREAKDOWN HIERARCHY:

- 1) WATER SPRAY BOILER EPD&C
- 2) PANEL L4
- 3) CB (131, 135)
- 4)
- 5)
- 6)
- 7) 8)
- 9)

#### CRITICALITIES

FLIGHT PHASE	HDW/FUNC	ABORT	HDW/FUNC
PRELAUNCH:	3/3	RTLS:	3/3
LIFTOFF:	3/3	TAL:	3/3
ONORBIT:	3/3	AOA:	3/3
DEORBIT:	3/3	ATO:	3/3
LANDING/SAFING	: 3/3		

REDUNDANCY SCREENS: A [NA ] B [NA ] C [NA ]

LOCATION:

31V73A4 (VS70-580119E)

PART NUMBER:

CAUSES: JAMMING, PIECE-PART FAILURE

#### EFFECTS/RATIONALE:

CONSTANT POWER TO CONTROLLER A/B CONTACT ON APU/HYD BOILER CONTROLLER POWER/HEATER SWITCH.

REFERENCES: VS70-580119E, SPACE SHUTTLE SYSTEMS HANDBOOK, VOL II, SECT 12

#### INDEPENDENT ORBITER ASSESSMENT ORBITER SUBSYSTEM ANALYSIS WORKSHEET

DATE:

1/27/88

HIGHEST CRITICALITY HDW/FUNC

SUBSYSTEM: HYD/WSB

FLIGHT:

2/1R

MDAC ID:

1761

ABORT:

2/1R

ITEM:

BY-PASS RELAY

FAILURE MODE: FAILS OPEN OR SHORTED TO GROUND

LEAD ANALYST: W. DAVIDSON

SUBSYS LEAD: W. DAVIDSON

B [ P ] C [ P ]

#### BREAKDOWN HIERARCHY:

- 1) WATER SPRAY BOILER EPD&C
- 2) PANEL R2
- BY-PASS RELAY 3)
- 4)
- 5)
- 6)
- 7)
- 8) 9)

#### CRITICALITIES

FLIGHT PHASE	HDW/FUNC	ABORT	HDW/FUNC
PRELAUNCH:	/NA	RTLS:	2/1R
LIFTOFF:	2/1R	TAL:	2/1R
ONORBIT:	2/1R	AOA:	2/1R
DEORBIT:	2/1R	ATO:	2/1R
LANDING/SAFING:	2/1R		•

LANDING/SAFING: 2/IR

REDUNDANCY SCREENS: A [ 2 ]

LOCATION: PART NUMBER:

CAUSES: CONTAMINATION, STRUCTURAL FAILURE

32V73A2(VS70-580119E)

#### EFFECTS/RATIONALE:

LOSS OF 115VAC POWER TO BOILER CONTROLLER AND BYPASS VALVE. LOSS OF HYDRAULIC FLUID AND LUBE OIL COOLING. POSSIBLE LOSS OF SYSTEM ON ASCENT.

REFERENCES: VS70-580119E, SPACE SHUTTLE SYSTEMS HANDBOOK, VOL II, SECT 12

#### INDEPENDENT ORBITER ASSESSMENT ORBITER SUBSYSTEM ANALYSIS WORKSHEET

HIGHEST CRITICALITY HDW/FUNC DATE: 1/26/88 SUBSYSTEM: HYD/WSB FLIGHT: 3/1R ABORT: 3/3 MDAC ID: 1771 BOILER CONTROL POWER/HEATER SWITCH ITEM: FAILURE MODE: INADVERTENT OPERATION (CLOSING) OF SWITCH

LEAD ANALYST: W. DAVIDSON SUBSYS LEAD: W. DAVIDSON

BREAKDOWN HIERARCHY:

- 1) WATER SPRAY BOILER EPD&C
- 2) PANEL R2
- 3) BOILER CONTROL POWER/HEATER SW (S41)

4)

5)

6)

7) 8) 9)

CRITICALITIES

FLIGHT PHASE	HDW/FUNC	ABORT	HDW/FUNC
PRELAUNCH:	/NA	RTLS:	/NA
LÏFTÖFF:	/NA	TAL:	/NA
ONORBIT:	3/1R	AOA:	/NA
DEORBIT:	3/1R	ATO:	3/3
LANDING/SAFING:	: 3/1R	: 1	

REDUNDANCY SCREENS: A [ 2 ] B [NA ] C [ P ]

LOCATION: 32V73A2(VS70-580119E)

PART NUMBER:

CAUSES: STRUCTURAL FAILURE, MECHANICAL SHOCK

EFFECTS/RATIONALE:

POWER WOULD BE APPLIED TO HYBRID DRIVERS ANT TO BYPASS VALVE. FAILURE DOES NOT MEET CIL CRITERIA.

REFERENCES: VS70-580119E, SPACE SHUTTLE SYSTEMS HANDBOOK, VOL II, SECT 12

## INDEPENDENT ORBITER ASSESSMENT ORBITER SUBSYSTEM ANALYSIS WORKSHEET

DATE: 1/26/88 HIGHEST CRITICALITY HDW/FUNC SUBSYSTEM: HYD/WSB FLIGHT: 3/1R MDAC ID: 1791 ABORT: /NA

ITEM: BOILER CONTROL SW

FAILURE MODE: INADVERTENT OPERATION, PREMATURE TRANSFER TO "ON"

LEAD ANALYST: W. DAVIDSON SUBSYS LEAD: W. DAVIDSON

#### BREAKDOWN HIERARCHY:

- 1) WATER SPRAY BOILER EPD&C
- 2) PANEL R2
- 3) BOILER CNTRL SW (S38)
- 4)
- 5)
- 6)
- 7) 8)
- 9)

#### CRITICALITIES

FLIGHT PHASE	HDW/FUNC	ABORT	HDW/FUNC
PRELAUNCH:	/NA	RTLS:	/NA
LIFTOFF:	/NA	TAL:	/NA
ONORBIT:	3/3	AOA:	/NA
DEORBIT:	/NA	ATO:	/NA
LANDING/SAFIN	IG: /NA		

REDUNDANCY SCREENS: A [NA ] B [NA ] C [NA ]

LOCATION: 32V73A2(

32V73A2 (VS70-580119E)

PART NUMBER:

CAUSES: CONTAMINATION, STRUCTURAL FAILURE, VIBRATION

EFFECTS/RATIONALE:

POWER TO SPRAY VALVE CONTROL CIRCUITS REMAINS ON.

REFERENCES: VS70-580119E, SPACE SHUTTLE SYSTEMS HANDBOOK, VOL II, SECT 12

#### INDEPENDENT ORBITER ASSESSMENT ORBITER SUBSYSTEM ANALYSIS WORKSHEET

HIGHEST CRITICALITY HDW/FUNC DATE: 1/27/88 SUBSYSTEM: HYD/WSB FLIGHT: 3/3

ABORT: 3/3 MDAC ID: 1832

ITEM: CONTROL BUS RESISTORS, WSB CNTRLR PWR HTR SW

FAILURE MODE: SHORTS

LEAD ANALYST: W. DAVIDSON SUBSYS LEAD: W. DAVIDSON

#### BREAKDOWN HIERARCHY:

- 1) WATER SPRAY BOILER
- 2) PANEL R2
- 3) RESISTOR CURRENT LIMITER

4)

5)

6)

7) 8)

9)

#### CRITICALITIES

FLIGHT PHASE	HDW/FUNC	ABORT	HDW/FUNC
PRELAUNCH:	3/3	RTLS:	3/3
LIFTOFF:	3/3	TAL:	3/3
ONORBIT:	3/3	AOA:	3/3
DEORBIT:	3/3	ATO:	3/3
LANDING/SAFING:	3/3	. = .	

REDUNDANCY SCREENS: A [NA ] B [NA ] C [NA ]

LOCATION: 32V73A2 (VS70-580119E)

PART NUMBER:

CAUSES: THERMAL STRESS, VIBRATION, CONTAMINATION

EFFECTS/RATIONALE:

NONE.

REFERENCES: VS70-580119E, SPACE SHUTTLE SYSTEMS HANDBOOK, VOL II, SECT 12

DATE: 1/27/88 HIGHEST CRITICALITY HDW/FUNC SUBSYSTEM: HYD/WSB FLIGHT: 3/3 MDAC ID: 1834 ABORT: 3/3

ITEM: CONTROL BUS RESISTORS, WSB N2 SUPPLY SWITCH

FAILURE MODE: SHORTS

LEAD ANALYST: W. DAVIDSON SUBSYS LEAD: W. DAVIDSON

### BREAKDOWN HIERARCHY:

- 1) WATER SPRAY BOILER EPD&C
- 2) PANEL R2
- 3) RESISTOR CURRENT LIMITER
- 4)
- 5)
- 6)
- 7) 8)
- 9)

#### CRITICALITIES

FLIGHT PHASE	HDW/FUNC	ABORT	HDW/FUNC
PRELAUNCH:	3/3	RTLS:	3/3
LIFTOFF:	3/3	TAL:	3/3
ONORBIT:	•	AOA:	•
	3/3	***************************************	3/3
DEORBIT:	3/3	ATO:	3/3
LANDING/SAFING:	3/3		

REDUNDANCY SCREENS: A [NA ] B [NA ] C [NA ]

LOCATION:

32V73A2 (VS70-580119E)

PART NUMBER:

CAUSES:

EFFECTS/RATIONALE:

NONE.

REFERENCES: VS70-580119E, SPACE SHUTTLE SYSTEMS HANDBOOK, VOL II, SECT 12

HIGHEST CRITICALITY HDW/FUNC 1/26/88 DATE: FLIGHT: 2/1R SUBSYSTEM: HYD/WSB 2/1R ABORT: MDAC ID: 1841

SWITCH, "APU/HYD BOILER N2 SUPPLY" ITEM: FAILURE MODE: SWITCH FAILS CLOSED (ALL CONTACTS)

LEAD ANALYST: W. DAVIDSON SUBSYS LEAD: W. DAVIDSON

## BREAKDOWN HIERARCHY:

- 1) WATER SPRAY BOILER EPD&C
- PANEL R2
- BOILER N2 SUPPLY SW (S44) 3)
- 4)
- 5)
- 6) 7)
- 8)

#### CRITICALITIES

FLIGHT PHASE	HDW/FUNC	ABORT	HDW/FUNC
PRELAUNCH:	3/3	RTLS:	3/3
LIFTOFF:	3/3	TAL:	2/1R
ONORBIT:	2/1R	AOA:	2/1R
DEORBIT:	2/1R	ATO:	2/1R
LANDING/SAFING:		•	•

REDUNDANCY SCREENS: A [ 2 ] B [ P ] C [ P ]

LOCATION: 32V73A2(VS70-580119E)

PART NUMBER:

CAUSES: VIBRATION, MECHANICAL FAILURE, STRUCTURAL FAILURE

EFFECTS/RATIONALE:

LOSS OF ABILITY TO EXPELL WATER. LOSS OF SYSTEM DURING ENTRY. WSB IN POOL MODE FOR ASCENT.

REFERENCES: VS70-580119E, SPACE SHUTTLE SYSTEMS HANDBOOK, VOL II, SECT 12

HIGHEST CRITICALITY HDW/FUNC DATE: 1/27/88

SUBSYSTEM: HYD/WSB 3/1R FLIGHT: 3/1R MDAC ID: 1862 ABORT:

ITEM: HYBRID DRIVER CIRCUIT FAILURE MODE: INADVERTENT OUTPUT

LEAD ANALYST: W. DAVIDSON SUBSYS LEAD: W. DAVIDSON

### BREAKDOWN HIERARCHY:

- 1) WATER SPRAY BOILER EPD&C
- 2) LOAD CONTROL ASSY
- 3) HYBRID DRIVER CIRCUIT
- 4)
- 5)
- 6)
- 7)
- 8)
- 9)

#### CRITICALITIES

FLIGHT PHASE	HDW/FUNC	ABORT	HDW/FUNC
PRELAUNCH:	/NA	RTLS:	2/1R
LIFTOFF:	3/1R	TAL:	3/1R
ONORBIT:	3/1R	AOA:	3/1R
DEORBIT:	3/1R	ATO:	3/1R
LANDING/SAFING	: 3/1R		. •

REDUNDANCY SCREENS: A [ 2 ] B [NA ] C [ P ]

LOCATION: 32V73A2(V70-580119E)

PART NUMBER:

CAUSES: THERMAL STRESS, VIBRATION

EFFECTS/RATIONALE:

INADVERTENT OUTPUT CLOSES VALVE. REDUNDANT CONTROLLER RESTORES NORMAL OPERATION.

The second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second secon

REFERENCES: V70-580119E, SPACE SHUTTLE SYSTEMS HANDBOOK, VOL II, SECT 12

HIGHEST CRITICALITY HDW/FUNC 1/27/88 DATE: FLIGHT: 3/3 SUBSYSTEM: HYD/WSB **NA** ABORT: MDAC ID: 1865 HDC TYPE 1, GRD BOILER ON CMD ITEM: FAILURE MODE: OPEN, SHORTED TO GROUND, INADVERTENT OUTPUT LEAD ANALYST: W. DAVIDSON SUBSYS LEAD: W. DAVIDSON BREAKDOWN HIERARCHY: WATER SPRAY BOILER - EPD&C LOAD CONTROL ASSY 2) HYBRID DRIVER CIRCUIT 3) 4) 5) 6) 7) 8) 9) CRITICALITIES HDW/FUNC ABORT HDW/FUNC FLIGHT PHASE RTLS: /NA PRELAUNCH: 3/3 /NA /NA TAL: LIFTOFF: /NA AOA: /NA ONORBIT:

ATO:

/NA

REDUNDANCY SCREENS: A [NA ] B [NA ] C [NA ]

/NA

/NA

32V73A2 (V70-580119E) LOCATION:

LANDING/SAFING:

PART NUMBER:

CAUSES: THERMAL STESS, STRUCTURAL FAILURES, VIBRATION

EFFECTS/RATIONALE:

NOT ACTIVE DURING FLIGHT.

DEORBIT:

REFERENCES: V70-580119E, SPACE SHUTTLE SYSTEMS HANDBOOK, VOL II, SECT 12

HIGHEST CRITICALITY HDW/FUNC 1/27/88 DATE: 3/3 FLIGHT: SUBSYSTEM: HYD/WSB ABORT: /NA MDAC ID: 1901 DIODE, GND CMD ISOL, 1A, WSB CNTRLR PWR CKTRY ITEM: FAILURE MODE: OPEN SUBSYS LEAD: W. DAVIDSON LEAD ANALYST: W. DAVIDSON BREAKDOWN HIERARCHY: 1) WATER SPRAY BOILER - EPD&C 2) AFT PCA ISOLATION DIODE (AICR6, 8) 3) 4) 5) 6) 7) 8) 9)

CRITICALITIES

FLIGHT PHASE HDW/FUNC HDW/FUNC ABORT /NA 3/3 RTLS: PRELAUNCH: /NA /NA TAL: LIFTOFF: /NA /NA AOA: ONORBIT: /NA ATO: DEORBIT: /NA LANDING/SAFING: /NA

REDUNDANCY SCREENS: A [NA ] B [NA ] C [NA ]

LOCATION: 55V76A135(VS70-580119E)

PART NUMBER:

CAUSES: THERMAL STRESS, VIBRATION, CONTAMINATION

EFFECTS/RATIONALE:

NONE

REFERENCES: VS70-580119E, SPACE SHUTTLE SYSTEMS HANDBOOK, VOL II, SECT 12

DATE: 2/01/88 HIGHEST CRITICALITY HDW/FUNC SUBSYSTEM: HYD/WSB FLIGHT: 1/1

SUBSYSTEM: HYD/WSB FLIGHT: 1/1
MDAC ID: 5000 ABORT: /NA

ITEM: VALVE, CHECK, L.G. HYD. CKT. FUSELAGE RETURN LINE

FAILURE MODE: FAILS CLOSED

LEAD ANALYST: W. DAVIDSON SUBSYS LEAD: W. DAVIDSON

#### BREAKDOWN HIERARCHY:

- 1) HYDRAULIC DISTRIBUTION, MONITORING, AND CONTROL
- 2) CHECK VALVE, AFT FUS. HYD. RETURN LINE
- 3)
- 4)
- 5)
- 6)
- 7) 8)
- 9)

#### CRITICALITIES

FLIGHT PHASE	HDW/FUNC	ABORT	HDW/FUNC
PRELAUNCH:	/NA	RTLS:	1/1
LIFTOFF:	/NA	TAL:	1/1
ONORBIT:	/NA	AOA:	1/1
DEORBIT:	/NA	ATO:	1/1
LANDING/SAFING:	: 1/1		

REDUNDANCY SCREENS: A [NA ] B [NA ] C [NA ]

LOCATION: 50V58CV19, 20, 21 (VS70-580999)

PART NUMBER: ME284-0434-1012, -1014 -

CAUSES: CONTAMINATION, BINDING

EFFECTS/RATIONALE:

INTERFERES WITH PROPER GEAR DEPLOY AND BREAKING.

REFERENCES: VS70-580119E, SPACE SHUTTLE SYSTEMS HANDBOOK, VOL

II, SECT 12

2/11/88 HIGHEST CRITICALITY HDW/FUNC DATE: FLIGHT: 3/2R SUBSYSTEM: HYD/WSB 2/1R ABORT: MDAC ID: 5001 VALVE, CHECK, L.G. HYD. CKT. FUSELAGE RETURN LINE ITEM:

FAILURE MODE: FAILS OPEN

LEAD ANALYST: W. DAVIDSON SUBSYS LEAD: W. DAVIDSON

## BREAKDOWN HIERARCHY:

- 1) HYDRAULIC DISTRIBUTION, MONITORING, AND CONTROL
- CHECK VALVE, AFT FUS. HYD. RETURN LINE 2)
- 3)
- 4)
- 5)
- 6)
- 7) 8)
- 9)

#### CRITICALITIES

FLIGHT PHASE	HDW/FUNC	ABORT	HDW/FUNC
PRELAUNCH:	/NA	RTLS:	2/1R
LIFTOFF:	3/2R	TAL:	3/2R
. ONORBIT:	3/2R	AOA:	3/2R
DEORBIT:	3/2R	ATO:	3/2R
LANDING/SAFING:	3/2R		

REDUNDANCY SCREENS: A [ 3 ] B [NA ] C [ P ]

LOCATION: 50V58CV19, 20, 21 (VS70-580999) PART NUMBER: ME284-0434-1012, -1014

CAUSES: CONTAMINATION, BROKEN SPRING, DAMAGED SEAT/POPPET

## EFFECTS/RATIONALE:

FAILS TO PROTECT AGAINST LOSS OF ALL HYDRAULIC FLUID IN CASE OF LEAK UPSTREAM OF CHECK VALVE.

REFERENCES: VS70-580119E, SPACE SHUTTLE SYSTEMS HANDBOOK, VOL II, SECT 12

DATE:

2/02/88

HIGHEST CRITICALITY HDW/FUNC

SUBSYSTEM: HYD/WSB

FLIGHT:

3/1R

MDAC ID: 8001

ABORT:

3/1R

ITEM:

DIODE, SURGE SUPPR. (3 AMP) HYD MN PUMP DEPRESS

VLV SOL. CKT

FAILURE MODE: INTERNAL SHORT

LEAD ANALYST: W. DAVIDSON SUBSYS LEAD: W. DAVIDSON

#### BREAKDOWN HIERARCHY:

- 1) HYDRAULIC MAIN PUMP
- 2) DEPRESS VALVE SOLENOID CKT
- 3) AFT PCA
- DIODE, SURGE SUPPRESSION (3 AMP) 4)

5)

6)

7)

8) 9)

#### CRITICALITIES

FLIGHT PHASE	HDW/FUNC	ABORT	HDW/FUNC
PRELAUNCH:	/NA	RTLS:	/NA
LIFTOFF:	/NA	TAL:	/NA
ONORBIT:	/NA	AOA:	3/1R
DEORBIT:	3/1R	ATO:	/NA
LANDING/SAFING	: /NA		•

REDUNDANCY SCREENS: A [ 3 ] B [ F ] C [ P ]

LOCATION: 55V76A135 (VS70-580109E)

PART NUMBER:

CAUSES: VIBRATION, THERMAL STRESS, MECHANICAL SHOCK

EFFECTS/RATIONALE:

LOSS OF ARC SUPPRESSION FOR CIRCUITRY, LOSS OF REDUNDANCY, SECOND FAILURE WILL RESULT IN THE LOST CAPABILITY TO ENERGIZE DEPRESS SOLENOID.

REFERENCES: VS70-580109E, SPACE SHUTTLE SYSTEMS HANDBOOK, VOL. II SECT. 12

HIGHEST CRITICALITY HDW/FUNC DATE: 2/03/88

3/1R SUBSYSTEM: HYD/WSB FLIGHT: ABORT: 3/1R MDAC ID: 8002

DIODE, ISOL, HYD MN PMP DEPRESS VALVE SOLENOID CKT ITEM:

FAILURE MODE: FAILS OPEN

LEAD ANALYST: P. BYNUM SUBSYS LEAD: W. DAVIDSON

#### BREAKDOWN HIERARCHY:

- 1) HYDRAULIC MAIN PUMP
- 2) DEPRESS VALVE SOLENOID CKT
- 3) AFT LCA
- DIODE 4)

5)

6)

7)

8) 9)

CRITICALITIES

VI.L. I VI.L. I VI.L. I			
FLIGHT PHASE	HDW/FUNC	ABORT	HDW/FUNC
PRELAUNCH:	/NA	RTLS:	/NA
LIFTOFF:	/NA	TAL:	/NA
ONORBIT:	/NA	AOA:	3/1R
DEORBIT:	3/1R	ATO:	/NA
LANDING/SAFING	G: /NA		-

REDUNDANCY SCREENS: A [ 2 ] B [ F ] C [ P ]

LOCATION: 55V76A122 (VS70-580109E)

PART NUMBER:

CAUSES: VIBRATION, MECHANICAL SHOCK, THERMAL STRESS

EFFECTS/RATIONALE:

LOSS OF REDUNDANCY TO POWER RETURN TO MAIN PUMP DEPRESS SOLENOID. SECOND FAILURE POTENTIAL LOSS OF ONE HYDRAULIC SYSTEM.

REFERENCES: VS70-580109E, SPACE SHUTTLE SYSTEM HANDBOOK, VOL. II, SECT. 12

2/03/88 HIGHEST CRITICALITY HDW/FUNC DATE: FLIGHT: 3/1R SUBSYSTEM: HYD/WSB ABORT: 3/1R MDAC ID: 8003

DIODE, ISOL (3A), HYD MN PMP DEPRESS VLV SOLENOID ITEM:

CKT

FAILURE MODE: FAILS OPEN

LEAD ANALYST: P. BYNUM SUBSYS LEAD: W. DAVIDSON

#### BREAKDOWN HIERARCHY:

- 1) HYDRAULIC MAIN PUMP
- DEPRESS VALVE SOLENOID CKT
- 3) AFT LCA
- 4) DIODE
- 5)
- 6)
- 7)
- 8) 9)

#### CRITICALITIES

FLIGHT PHASE	HDW/FUNC	ABORT	HDW/FUNC
PRELAUNCH:	/NA	RTLS:	/NA
LIFTOFF:	/NA	TAL:	/NA
ONORBIT:	/NA	AOA:	3/1R
DEORBIT:	3/1R	ATO:	/NA
LANDING/SAFING:	/NA		

REDUNDANCY SCREENS: A [ 2 ] B [ F ] C [ P ]

LOCATION:

55V76A123 (VS70-580109E)

PART NUMBER:

CAUSES: VIBRATION, MECHANICAL SHOCK, THERMAL SHOCK

EFFECTS/RATIONALE:

LOSS OF REDUNDANCY FOR POWER RETURN TO MAIN PUMP DEPRESS SOLENOID, SECOND FAILURE POTENTIAL LOSS OF ONE HYDRAULIC SYSTEM.

REFERENCES: VS70-580109E, SPACE SHUTTLE SYSTEMS HANDBOOK, VOL.

II SECT. 12

HIGHEST CRITICALITY HDW/FUNC DATE: 2/03/88

SUBSYSTEM: HYD/WSB FLIGHT: 3/1R MDAC ID: 8004 ABORT: 3/1R

HYBRID DRIVER TYPE 4, HYD L.G. RETR/CIRC VLV SOL. ITEM:

CKT

FAILURE MODE: INADVERTENT OUTPUT, SHORTS TO GROUND

LEAD ANALYST: P. BYNUM SUBSYS LEAD: W. DAVIDSON

#### BREAKDOWN HIERARCHY:

- MAIN HYDRAULIC SYSTEM 1
- RETRACT CIRC VALVE SOL CKT 2)
- 3) FWD LCA
- 4) HYDBRID DRIVER, TYPE 4
- 5)
- 6)
- 7)
- 8) 9)

### CRITICALITIES

FLIGHT PHASE	HDW/FUNC	ABORT	HDW/FUNC	
PRELAUNCH:	/NA	RTLS:	/NA	
LIFTOFF:	/NA	TAL:	/NA	
ONORBIT:	/NA	AOA:	3/1R	
DEORBIT:	3/1R	ATO:	3/1R	
LANDING/SAFING:	3/1R		•	

B[F] C[P] REDUNDANCY SCREENS: A [ 2 ]

LOCATION: 81V76A16 (VS70-580109E)

PART NUMBER:

CAUSES: THERMAL STRESS, VIBRATION, MECHANICAL SHOCK

## EFFECTS/RATIONALE:

NO EFFECT, FIRST FAILURE, CLOSED DRIVER MUST BE ENERGIZED TO CLOSE VALVE. SECOND FAILURE RPC FAILS ON ACTUATING SOLENOID VALVE.

REFERENCES: VS70-580109E, SPACE SHUTTLE SYSTEMS HANDBOOK, VOL. II, SECT. 12.

HIGHEST CRITICALITY HDW/FUNC DATE: 2/10/88 FLIGHT: 2/1R SUBSYSTEM: HYD/WSB 2/1R ABORT: MDAC ID: 8005 DIODE, HYD MN PUMP DEPRESS VLV SOL CKT. ITEM: FAILURE MODE: OPEN (ELECTRICAL)

LEAD ANALYST: P. BYNUM SUBSYS LEAD: W. DAVIDSON

BREAKDOWN HIERARCHY:

- 1) HYDRAULIC MAIN PUMP
- DEPRESS VALVE SOLENOID CKT 2)
- 3) AFT PCA
- DIODE, SURGE SUPPRESSION

5)

6)

7) 8)

9)

CRITICALITIES

FLIGHT PHASE	HDW/FUNC	ABORT	HDW/FUNC
PRELAUNCH:	/NA	RTLS:	/NA
LIFTOFF:	/NA	TAL:	/NA
ONORBIT:	/NA	AOA:	2/1R
DEORBIT:	2/1R	ATO:	/NA
LANDING/SAFING:	/NA		

REDUNDANCY SCREENS: A [ 3 ] B [ F ] C [ P ]

LOCATION: 55V76A135

PART NUMBER:

CAUSES: MECHANICAL SHOCK, THERMAL STRESS, VIBRATION

EFFECTS/RATIONALE:

DIODE OPEN WILL POSSIBLY CASE LOSS OF RPC AND/OR HYBRID DRIVER.

LOST CAPABILITY TO ACTIVATE DEPRESS SOLENOID VALVE.

REFERENCES: VS70-580109E, SPACE SHUTTLE SYSTEMS HANDBOOK, VOL. II, SECT. 12.

DATE: 2/13/88 HIGHEST CRITICALITY HDW/FUNC SUBSYSTEM: HYD/WSB FLIGHT: 3/1R MDAC ID: 8161 ABORT: 3/1R

ITEM: CONTROL FUSE (3A) HYD CIRC PUMP CNTRL

FAILURE MODE: OPEN

LEAD ANALYST: W. DAVIDSON SUBSYS LEAD: W. DAVIDSON

BREAKDOWN HIERARCHY:

- 1) HYDRAULIC CIRC PUMP
- AFT AVIONICS BAY 4
- 3) AFT POWER CONTACTOR ASSEMBLY NO. 4

4) CONTROL FUSE (3A)

5)

6)

7)

8) 9)

CRITICALITIES

FLIGHT PHASE	HDW/FUNC	ABORT	HDW/FUNC
PRELAUNCH:	/NA	RTLS:	/NA
LIFTOFF:	/NA	TAL:	/NA
ONORBIT:	3/1R	AOA:	/NA
DEORBIT:	/NA	ATO:	3/1R
LANDING/SAFING	: /NA		<b></b>

REDUNDANCY SCREENS: A [ 2 ] B [ P ] C [ P ]

LOCATION: 54V76A134 (VS70-580109)

PART NUMBER:

CAUSES: VIBRATION, MECHANICAL SHOCK, THERMAL STRESS

EFFECTS/RATIONALE:

POWER TO CIRC PUMP FROM TWO REDUNDANT CIRCUITS. POSSIBLE LOSS OF ONE CIRC PUMP.

REFERENCES: VS70-580109E, SPACE SHUTTLE SYSTEMS HANDBOOK, VOL II, SECT 12

# INDEPENDENT ORBITER ASSESSMENT

ORBITER SUBSYSTEM ANALYSIS WORKSHEET HIGHEST CRITICALITY HDW/FUNC 2/13/88 DATE: 3/3-FLIGHT: SUBSYSTEM: HYD/WSB /NA ABORT: MDAC ID: 8162 POWER FUSE (150 AMP), H40 CIRC PUMP CNTL ITEM: FAILURE MODE: OPEN LEAD ANALYST: W. DAVIDSON SUBSYS LEAD: W. DAVIDSON BREAKDOWN HIERARCHY: HYDRAULIC CIRC PUMP AFT AVIONICS BAY 4 2) AFT POWER CONTACTOR ASSEMBLY NO. 4 3) POWER CONTACTOR (K3, K4) 4) 5) 6) 7) 8) 9)

CRITICALITIES

FLIGHT PHASE	HDW/FUNC	ABORT	HDW/FUNC
PRELAUNCH:	/NA	RTLS:	/NA
LIFTOFF:	/NA	TAL:	/NA
ONORBIT:	3/3	AOA:	/NA
DEORBIT:	/NA	ATO:	3/3
LANDING/SAFING	: /NA		

REDUNDANCY SCREENS: A [NA ] B [NA ] C [NA ]

54V76A134 (VS70-580109) LOCATION:

PART NUMBER:

CAUSES: VIBRATION, MECHANICAL SHOCK

EFFECTS/RATIONALE:

LOSS OF REDUNDANCY POWER TO ONE CIRC PUMP.

REFERENCES: VS70-580109E, SPACE SHUTTLE SYSTEMS HANDBOOK, VOL II, SECT 12

HIGHEST CRITICALITY HDW/FUNC DATE: 2/11/88 SUBSYSTEM: HYD/WSB FLIGHT: 3/1R MDAC ID: 8461 ABORT: /NA

PWR SW S25 ITEM:

FAILURE MODE: FAILS OPEN, SHORTS TO GROUND

LEAD ANALYST: J. DUVAL SUBSYS LEAD: W. DAVIDSON

BREAKDOWN HIERARCHY:

- 1) HYDRAULIC CIRC PUMP
- 2) PANEL A12
- PWR SW S25 3)
- 4)
- 5)
- 6)
- 7)
- 8) 9)

CRITICALITIES

FLIGHT PHASE	HDW/FUNC	ABORT	HDW/FUNC
PRELAUNCH:	/NA	RTLS:	/NA
LIFTOFF:	/NA	TAL:	/NA
ONORBIT:	3/1R	AOA:	/NA
DEORBIT:	/NA	ATO:	/NA
LANDING/SAFING	: /NA		

REDUNDANCY SCREENS: A [ 2 ] B [ P ] C [ P ]

LOCATION: 36V73A12 (VS70-580109E)

PART NUMBER:

CAUSES: VIBRATION, MECHANICAL SHOCK, CONTAMINATION

EFFECTS/RATIONALE:

LOSS OF FUNCTION. LOSS OF POWER TO CIRC PUMP ACTIVATION CIRCUITS.

REFERENCES: VS70-580109E, SPACE SHUTTLE SYSTEMS HANDBOOK, VOL

II, SECT 12

HIGHEST CRITICALITY HDW/FUNC 12/04/86 SUBSYSTEM: HYD/WSB FLIGHT: 3/1R ABORT: /NA MDAC ID: 8462

ITEM:

PWR SW S25

FAILURE MODE: INTERNAL SHORT ALL CONTACTS

LEAD ANALYST: J. DUVAL SUBSYS LEAD: W. DAVIDSON

BREAKDOWN HIERARCHY:

- 1) HYDRAULIC CIRC PUMP
- PANEL A12 2)
- PWR SW S25 3)
- 4)
- 5)
- 6)
- 7) 8)
- 9)

CRITICALITIES

FLIGHT PHASE	HDW/FUNC	ABORT	HDW/FUNC
PRELAUNCH:	/NA	RTLS:	/NA
LIFTOFF:	/NA	TAL:	/NA
ONORBIT:	3/1R	AOA:	/NA
DEORBIT:	/NA	ATO:	/NA
LANDING/SAFING	: /NA	e San Carlotte Control of Carlotte Control of Carlotte Control of Carlotte Control of Carlotte Control of Carlotte Control of Carlotte Control of Carlotte Control of Carlotte Control of Carlotte Control of Carlotte Control of Carlotte Control of Carlotte Control of Carlotte Control of Carlotte Control of Carlotte Control of Carlotte Control of Carlotte Control of Carlotte Control of Carlotte Control of Carlotte Control of Carlotte Control of Carlotte Control of Carlotte Control of Carlotte Control of Carlotte Control of Carlotte Control of Carlotte Control of Carlotte Control of Carlotte Control of Carlotte Control of Carlotte Control of Carlotte Control of Carlotte Control of Carlotte Control of Carlotte Control of Carlotte Control of Carlotte Control of Carlotte Control of Carlotte Control of Carlotte Control of Carlotte Control of Carlotte Control of Carlotte Control of Carlotte Control of Carlotte Control of Carlotte Control of Carlotte Control of Carlotte Control of Carlotte Control of Carlotte Control of Carlotte Control of Carlotte Control of Carlotte Control of Carlotte Control of Carlotte Control of Carlotte Control of Carlotte Control of Carlotte Control of Carlotte Control of Carlotte Control of Carlotte Control of Carlotte Control of Carlotte Control of Carlotte Control of Carlotte Control of Carlotte Control of Carlotte Control of Carlotte Control of Carlotte Control of Carlotte Control of Carlotte Control of Carlotte Control of Carlotte Control of Carlotte Control of Carlotte Control of Carlotte Control of Carlotte Control of Carlotte Control of Carlotte Control of Carlotte Control of Carlotte Control of Carlotte Control of Carlotte Control of Carlotte Control of Carlotte Control of Carlotte Control of Carlotte Control of Carlotte Control of Carlotte Control of Carlotte Control of Carlotte Control of Carlotte Control of Carlotte Control of Carlotte Control of Carlotte Control of Carlotte Control of Carlotte Control of Carlotte Control of Carlotte Control of Carlotte Control of Carlotte Control of	

REDUNDANCY SCREENS: A [ 2 ] B [ P ] C [ P ]

LOCATION: 36V73A12 (VS70-580109E)

PART NUMBER:

CAUSES: VIBRATION, MECHANICAL SHOCK, CONTAMINATION

EFFECTS/RATIONALE:

POSSIBLE LOSS OF ONE CIRC. PUMP BECAUSE OFF INDETERMINATE CIRCUIT BEHAVIOR (RELAY RACE).

REFERENCES: VS70-580109E, SPACE SHUTTLE SYSTEMS HANDBOOK, VOL II, SECT 12

DATE: 12/13/86 HIGHEST CRITICALITY HDW/FUNC SUBSYSTEM: HYD/WSB 3/3 FLIGHT: MDAC ID: 8751 ABORT: /NA ITEM: FUSE, (1A) LG RETRACT/CIRC VLV SOLENOID FAILURE MODE: OPEN (ELECTRICAL) LEAD ANALYST: P. BYNUM SUBSYS LEAD: W. DAVIDSON BREAKDOWN HIERARCHY:

- 1) MAIN HYDRAULIC SYSTEM 1
- 2) RETRACT CIRC VALVE
- 3) PANEL R4
- 4) LG RETRACT/CIRC VLV SOLENOID
- 5) FUSE (1A)
- 6)
- 7)
- 8)
- 9)

#### CRITICALITIES

FLIGHT PHASE	HDW/FUNC	ABORT	HDW/FUNC
PRELAUNCH:	/NA	RTLS:	/NA
LIFTOFF:	/NA	TAL:	/NA
ONORBIT:	/NA	AOA:	/NA
DEORBIT:	/NA	ATO:	/NA
LANDING/SAFING	: 3/3		·

REDUNDANCY SCREENS: A [NA ] B [NA ] C [NA ]

LOCATION: 32V73A4 (VS70-580190E)

PART NUMBER:

CAUSES: MECHANICAL SHOCK, THERMAL SHOCK, VIBRATION

EFFECTS/RATIONALE:

PROVIDES CURRENT LIMITING/PROTECTION OF POWER TO N/C SOLENOID VALVE FOR LG RETRACT/CIRC HYDRAULIC OPERATIONS DURING GROUND TURNAROUND ONLY.

HIGHEST CRITICALITY HDW/FUNC 2/13/88 DATE: 3/3 FLIGHT: SUBSYSTEM: HYD/WSB /NA ABORT:

MDAC ID: 8752

RESISTOR, (1.21K), LG RETRACT/CIRC VLV SOLENOID

ITEM: CKT

FAILURE MODE: OPEN (ELECTRICAL) SHORTED

LEAD ANALYST: P. BYNUM SUBSYS LEAD: W. DAVIDSON

BREAKDOWN HIERARCHY:

1) MAIN HYDRAULIC SYSTEM 1

RETRACT CIRC VALVE 2)

3) PANEL R4

4) LG RETRACT/CIRC VLV SOLENOID CKT

5) RESISTOR (1.21K)

6)

7) 8)

9)

CRITICALITIES

FLIGHT PHASE	HDW/FUNC	ABORT	HDW/FUNC
PRELAUNCH:	/NA	RTLS:	/NA
LIFTOFF:	/NA	TAL:	/NA
ONORBIT:	/NA	AOA:	/NA
DEORBIT:	/NA	ATO:	/ÑA
LANDING/SAFING	: 3/3		

REDUNDANCY SCREENS: A [NA ] B [NA ] C [NA ]

LOCATION: 32V73A4 (VS70-580190E)

PART NUMBER:

CAUSES: MECHANICAL SHOCK, THERMAL SHOCK, VIBRATION

EFFECTS/RATIONALE: SHORT, NO EFFECT. OPEN, LOSS OF REDUNDANT POWER SOURCE TO ENERGIZE SOLENOID. RESISTOR PROVIDES CURRENT LIMITING OF POWER TO NORMALLY CLOSE SOLENOID VALVE FOR LANDING GEAR RETRACT/CIRC HYDRAULIC OPERATION DURING GROUND TURNAROUND ONLY.

THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY O

DATE: HIGHEST CRITICALITY HDW/FUNC 2/13/88

SUBSYSTEM: HYD/WSB FLIGHT: 3/3 /NA MDAC ID: 8753 ABORT:

ITEM: RPC, LG RETRACT/CIRC VLV SOLENOID CKT

FAILURE MODE: OPEN (ELECTRICAL) LOSS OF OUTPUT

LEAD ANALYST: P. BYNUM SUBSYS LEAD: W. DAVIDSON

#### BREAKDOWN HIERARCHY:

- 1) MAIN HYDRAULIC SYSTEM 1
- 2) RETRACT CIRC VALVE
- 3) FPCA 1,2
- 4) LG RETRACT/CIRC VLV SOLENOID CKT
- 5) RPC
- 6)
- 7)
- 8)
- 9)

#### CRITICALITIES

FLIGHT PHASE	HDW/FUNC	ABORT	HDW/FUNC
PRELAUNCH:	/NA	RTLS:	/NA
LIFTOFF:	/NA	TAL:	/NA
ONORBIT:	/NA	AOA:	/NA
DEORBIT:	/NA	ATO:	/NA
LANDING/SAFING	: 3/3		•

REDUNDANCY SCREENS: A [NA ] B [NA ] C [NA ]

LOCATION: 81V76A22 (VS70-580109E)

PART NUMBER:

CAUSES: CONTAMINATION, MECHANICAL SHOCK, PIECE-PART FAILURE, THERMAL SHOCK, VIBRATION

EFFECTS/RATIONALE:

LOSS OF REDUNDANT POWER TO ENERGIZE SOLENOID. FAILURE EFFECTS APPLICABLE ONLY DURING GROUND TURNAROUND/CHECKOUT.

HIGHEST CRITICALITY HDW/FUNC DATE: 2/13/88

3/1R FLIGHT:

SUBSYSTEM: HYD/WSB MDAC ID: 8754

/NA ABORT:

ITEM:

RPC, LG RETRACT/CIRC VLV SOLENOID CKT

FAILURE MODE: INADVERTANT OPERATION

LEAD ANALYST: P. BYNUM SUBSYS LEAD: W. DAVIDSON

BREAKDOWN HIERARCHY:

- 1) MAIN HYDRAULIC SYSTEM 1
- RETRACT CIRC VALVE
- 3) FPCA 1,2
- 4) LG RETRACT VLV SOLENOID CKT
- 5) RPC
- 6)
- 7)
- 8)
- 9)

CRITICALITIES

FLIGHT PHASE	HDW/FUNC	ABORT	HDW/FUNC
PRELAUNCH:	/NA	RTLS:	/NA
LIFTOFF:	/NA	TAL:	/NA
ONORBIT:	/NA	AOA:	/NA
DEORBIT:	/NA	ATO:	/NA
LANDING/SAFING:	3/1R		

REDUNDANCY SCREENS: A [ 2 ] B [ P ] C [ P ]

LOCATION:

81V76A22 (VS70-580109E)

PART NUMBER:

CAUSES: CONTAMINATION, MECHANICAL SHOCK, PIECE-PART FAILURE,

THERMAL SHOCK, VIBRATION

EFFECTS/RATIONALE:

DATE: 2/13/88 HIGHEST CRITICALITY HDW/FUNC SUBSYSTEM: HYD/WSB FLIGHT: 3/3

MDAC ID: 8755 ABORT: /NA

ITEM: HYBRID DRIVER, TYPE 4, LG RETRACT/CIRC VLV

SOLENOID CKT

FAILURE MODE: OPEN (ELECTRICAL) LOSS OF OUTPUT

LEAD ANALYST: P. BYNUM SUBSYS LEAD: W. DAVIDSON

## BREAKDOWN HIERARCHY:

- 1) MAIN HYDRAULIC SYSTEM 1
- 2) RETRACT CIRC VALVE SOLENOID CKT
- 3) FLCA 1,2
- 4) HYBRID DRIVER, TYPE 4

5)

6)

7)

8) 9)

CRITICALITIES

	VIII VIII			
FLIGHT PHASE	HDW/FUNC	ABORT	HDW/FUNC	
PRELAUNCH:	/NA	RTLS:	/NA	
LIFTOFF:	/NA	TAL:	/NA	
ONORBIT:	- /NA	AOA:	/NA	
DEORBIT:	/NA	ATO:	/NA	
LANDING/SAFING:	3/3		•	

LANDING/SAFING: 3/3

REDUNDANCY SCREENS: A [NA ] B [NA ] C [NA ]

LOCATION:

81V76A16 (VS70-580109E)

PART NUMBER:

CAUSES: CONTAMINATION, MECHANICAL SHOCK, PIECE-PART FAILURE,

THERMAL SHOCK, VIBRATION

EFFECTS/RATIONALE:

HIGHEST CRITICALITY HDW/FUNC DATE: 2/13/88 FLIGHT: 3/3 SUBSYSTEM: HYD/WSB

/NA ABORT: MDAC ID: 8756

HYBRID DRIVER, TYPE 1, LG RETRACT/CIRC VLV ITEM:

SOLENOID CKT

FAILURE MODE: OPEN (ELECTRICAL), LOSS OF OUTPUT, SHORT TO GROUND

LEAD ANALYST: P. BYNUM SUBSYS LEAD: W. DAVIDSON

## BREAKDOWN HIERARCHY:

- 1) MAIN HYDRAULIC SYSTEM 1
- 2) RETRACT/CIRC VALVE SOLENOID CKT
- 3) FLCA 1,2
- 4) HYBRID DRIVER, TYPE 1
- 5)
- 6)
- 7) 8)
- 9)

## CRITICALITIES

FLIGHT PHASE	HDW/FUNC	ABORT	HDW/FUNC	
PRELAUNCH:	/NA	RTLS:	/NA	
LIFTOFF:	/NA	TAL:	/NA	
ONORBIT:	/NA	AOA:	/NA	
DEORBIT:	/NA	ATO:	/NA	
LANDING/SAFING	: 3/3			

REDUNDANCY SCREENS: A [NA ] B [NA ] C [NA ]

LOCATION: 81V76A17 (VS70-580109E)

PART NUMBER:

CAUSES: CONTAMINATION, MECHANICAL SHOCK, PIECE-PART FAILURE,

THERMAL SHOCK, VIBRATION

EFFECTS/RATIONALE:

HIGHEST CRITICALITY HDW/FUNC DATE: 2/13/88

SUBSYSTEM: HYD/WSB FLIGHT: 3/1R MDAC ID: 8757 ABORT: /NA

ITEM: HYBRID DRIVER, TYPE 1, LG RETRACT/CIRC VLV

SOLENOID CKT

FAILURE MODE: INADVERTENT OUTPUT

LEAD ANALYST: P. BYNUM SUBSYS LEAD: W. DAVIDSON

#### BREAKDOWN HIERARCHY:

- MAIN HYDRAULIC SYSTEM 1
- 2) RETRACT CIRC VALVE
- 3) FLCA 1,2
- LG RETRACT/CIRC VLV SOLENOID 4)
- 5) HYBRID DRIVER, TYPE 1

6)

7)

8)

9)

#### CRITICALITIES

FLIGHT PHASE	HDW/FUNC	ABORT	HDW/FUNC	
PRELAUNCH:	/NA	RTLS:	/NA	
LIFTOFF:	/NA	TAL:	/NA	
ONORBIT:	/NA	AOA:	/NA	
DEORBIT:	/NA	ATO:	/NA	
LANDING/SAFING:	3/1R	-	· · · · · · · · · · · · · · · · · · ·	

REDUNDANCY SCREENS: A [ 2 ] B [ P ] C [ P ]

LOCATION:

81V76A17 (VS70-580109E)

PART NUMBER:

CAUSES: CONTAMINATION, MECHANICAL SHOCK, PIECE-PART FAILURE,

THERMAL SHOCK, VIBRATION

EFFECTS/RATIONALE:

HIGHEST CRITICALITY HDW/FUNC 2/13/88 DATE: FLIGHT: 3/3

SUBSYSTEM: HYD/WSB ABORT: /NA MDAC ID: 8758

DIODE, SURGE SUPP, (3A), LG RETRACT/CIRC VLV ITEM:

SOLENOID CKT

FAILURE MODE: OPEN (ELECTRICAL), SHORTED

LEAD ANALYST: P. BYNUM SUBSYS LEAD: W. DAVIDSON

## BREAKDOWN HIERARCHY:

- 1) MAIN HYDRAULIC SYSTEM 1
- RETRACT CIRC VALVE 2)
- 3) FPCA 2
- 4) LG RETRACT/CIRC VLV SOLENOID CKT
- DIODE, SURGE SUPPRESSION, (3A) 5)
- 6)
- 7)
- 8)
- 9)

### CRITICALITIES

FLIGHT PHASE	HDW/FUNC	ABORT	HDW/FUNC
PRELAUNCH:	/NA	RTLS:	/NA
LIFTOFF:	/NA	TAL:	/NA
ONORBIT:	/NA	AOA:	/NA
DEORBIT:	/NA	ATO:	/NA
LANDING/SAFING:	3/3		•

REDUNDANCY SCREENS: A [NA ] B [NA ] C [NA ]

LOCATION: 82V76A23 (VS70-580109E)

PART NUMBER:

CAUSES: CONTAMINATION, MECHANICAL SHOCK, VIBRATION, THERMAL

SHOCK

EFFECTS/RATIONALE:

DATE: 2/13/88 HIGHEST CRITICALITY HDW/FUNC

SUBSYSTEM: HYD/WSB FLIGHT: 3/3 MDAC ID: 8759 ABORT: /NA

ITEM: DIODE, BUS ISOLATION, (1A) (3A)

FAILURE MODE: OPEN (ELECTRICAL), SHORTED

LEAD ANALYST: P. BYNUM SUBSYS LEAD: W. DAVIDSON

#### BREAKDOWN HIERARCHY:

- 1) MAIN HYDRAULIC SYSTEM 1
- 2) RETRACT CIRC VALVE
- 3) FLCA/FPCA 1, 2
- 4) LG RETRACT/CIRC VLV SOLENOID VLVE CKT
- 5) DIODE, BUS ISOLATION, (1A) (3A)
- 6)
- 7)
- 8)
- 9)

#### CRITICALITIES

V1/2 1 2 V1.11 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1			
FLIGHT PHASE	HDW/FUNC	ABORT	HDW/FUNC
PRELAUNCH:	/NA	RTLS:	/NA
LIFTOFF:	/NA	TAL:	/NA
ONORBIT:	/NA	AOA:	/NA
DEORBIT:	/NA	ATO:	/NA
LANDING/SAFING:	3/3		·

REDUNDANCY SCREENS: A [NA ] B [NA ] C [NA ]

LOCATION: 82V76A23, (1A), 82V76A17, (3A) (VS70-580109E) PART NUMBER:

CAUSES: CONTAMINATION, MECHANICAL SHOCK, THERMAL SHOCK, VIBRATION

EFFECTS/RATIONALE:

HIGHEST CRITICALITY HDW/FUNC DATE: 2/13/88 FLIGHT: SUBSYSTEM: HYD/WSB 3/3 ABORT: /NA 8761 MDAC ID: DIODES, RPC PWR ISOLATION, (2A) (12A) ITEM: FAILURE MODE: OPEN (ELECTRICAL), SHORTED LEAD ANALYST: P. BYNUM SUBSYS LEAD: W. DAVIDSON BREAKDOWN HIERARCHY: 1) MAIN HYDRAULIC SYSTEM 1 2) RETRACT CIRC VALVE 3) FPCA 1,2 4) LG RETRACT/CIRC VLV SOLENOID VALVE CK 5) DIODE, RPC PWR ISOLATION (2A) (12A) 6) 7) 8) 9) CRITICALITIES HDW/FUNC ABORT HDW/FUNC

RTLS: /NA ... /NA /NA /NA TAL: /NA /NA AOA:

ONORBIT: /NA /NA ATO: DEORBIT: LANDING/SAFING: 3/3

REDUNDANCY SCREENS: A [NA ] B [NA ] C [NA ]

82V76A23, A22 (VS70-580109E) LOCATION:

PART NUMBER:

CAUSES: CONTAMINATION, MECHANICAL SHOCK, THERMAL SHOCK,

VIBRATION

EFFECTS/RATIONALE:

FLIGHT PHASE

LIFTOFF:

PRELAUNCH:

DATE: 2/13/88 HIGHEST CRITICALITY HDW/FUNC SUBSYSTEM: HYD/WSB FLIGHT: 3/3 MDAC ID: 8762 ABORT: /NA

ITEM: DIODE, GROUND ISOLATION, RETRACT/CIR VLV,

(2A)(15A)

FAILURE MODE: OPEN (ELECTRICAL), SHORTED

LEAD ANALYST: P. BYNUM SUBSYS LEAD: W. DAVIDSON

#### BREAKDOWN HIERARCHY:

- 1) MAIN HYDRAULIC SYSTEM 1
- 2) RETRACT CIRC VALVE
- 3) FLCA 1,2
- 4) LG RETRACT/CIRC VLV SOLENOID VALVE CKT
- 5) DIODE, GROUND ISOLATION, (2A) (15A)
- 6)
- 7)
- 8)
- 9)

#### CRITICALITIES

FLIGHT PHASE H	HDW/FUNC	ABORT	HDW/FUNC
PRELAUNCH:	/NA	RTLS:	/NA
LIFTOFF:	/NA	TAL:	/NA
ONORBIT:	/NA	AOA:	/NA
DEORBIT:	/NA	ATO:	/NA
LANDING/SAFING:	3/3		

REDUNDANCY SCREENS: A [NA ] B [NA ] C [NA ]

LOCATION: 82V76A23, A16, A17 (VS70-580109E)

PART NUMBER:

CAUSES: CONTAMINATION, MECHANICAL SHOCK, THERMAL SHOCK,

**VIBRATION** 

EFFECTS/RATIONALE:

2/13/88 HIGHEST CRITICALITY HDW/FUNC DATE: SUBSYSTEM: HYD/WSB FLIGHT: 3/1R MDAC ID: 8763 ABORT: 3/1R

ITEM:

DIODE, GROUND ISOLATION, (15A)

FAILURE MODE: SHORT TO GROUND

LEAD ANALYST: P. BYNUM SUBSYS LEAD: W. DAVIDSON

## BREAKDOWN HIERARCHY:

- 1) MAIN HYDRAULIC SYSTEM 1
- RETRACT CIRC VALVE 2)
- 3) FLCA 1,2
- LG RETRACT/CIRC VLV SOLENOID VALVE CKT 4)
- DIODE, GROUND ISOLATION, (15A)

6)

7)

8)

9)

#### CRITICALITIES

FLIGHT PHASE	HDW/FUNC	ABORT	HDW/FUNC
PRELAUNCH:	/NA	RTLS:	/NA
LIFTOFF:	/NA	TAL:	/NA
ONORBIT:	/NA	AOA:	/NA
DEORBIT:	/NA	ATO:	/NA
LANDING/SAFING:	3/1R		on the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of

REDUNDANCY SCREENS: A [ 2 ] B [ F ] C [ P ]

LOCATION: 82V76A17, A16 (VS70-580109E)

PART NUMBER:

CAUSES: CONTAMINATION, MECHANICAL SHOCK, THERMAL SHOCK,

VIBRATION

EFFECTS/RATIONALE:

DATE: 2/13/88 HIGHEST CRITICALITY HDW/FUNC

SUBSYSTEM: HYD/WSB FLIGHT: 3/3 MDAC ID: 8764 ABORT: /NA

ITEM: RESISTOR, MONITOR ISOLATION, (1.8K) (2.2K) (5.1K)

FAILURE MODE: OPEN (ELECTRICAL)

LEAD ANALYST: P. BYNUM SUBSYS LEAD: W. DAVIDSON

#### BREAKDOWN HIERARCHY:

- 1) MAIN HYDRAULIC SYSTEM 1
- RETRACT CIRC VALVE SOLENOID CKT
- 3) FPCA/FLCA 1,2
- 4) RESISTOR, MONITOR ISOLATION (1.8K) (2.2K) (5.1K)
- 5)
- 6)
- 7)
- 8) 9)

### CRITICALITIES

FLIGHT PHASE	HDW/FUNC	ABORT	HDW/FUNC
PRELAUNCH:	/NA	RTLS:	/NA
LIFTOFF:	/NA	TAL:	/NA
ONORBIT:	/NA	AOA:	/NA
DEORBIT:	/NA	ATO:	/NA
LANDING/SAFING:	3/3		

REDUNDANCY SCREENS: A [NA ] B [NA ] C [NA ]

LOCATION: 82V76A23, A16, A17 (VS70-580109E)

PART NUMBER:

CAUSES: CONTAMINATION, MECHANICAL SHOCK, THERMAL SHOCK, VIBRATION

EFFECTS/RATIONALE:

DATE: 2/13/88 HIGHEST CRITICALITY HDW/FUNC SUBSYSTEM: HYD/WSB FLIGHT: 3/1R MDAC ID: 8765 ABORT: /NA

ITEM: RESISTOR, SHORT CKT PROTECTION

FAILURE MODE: OPEN (ELECTRICAL)

LEAD ANALYST: P. BYNUM SUBSYS LEAD: W. DAVIDSON

## BREAKDOWN HIERARCHY:

- 1) MAIN HYDRAULIC SYSTEM 1
- 2) RETRACT CIRC VALVE
- 3) FPCA-1
- 4) LG RETRACT/CIRC SOLENOID VALVE CKT
- 5) RESISTOR, SHORT CKT PROTECTION
- 6)
- 7)
- 8) 9)

CRITICALITIES

	01(21201121122		•	
FLIGHT PHASE	HDW/FUNC	ABORT	HDW/FUNC	
PRELAUNCH:	/NA	RTLS:	/NA	
LIFTOFF:	/NA	TÀL:	/NA	
ONORBIT:	/NA	AOA:	/NA	
DEORBIT:	/NA	ATO:	/NA	
LANDING/SAFING:	3/1R			

REDUNDANCY SCREENS: A [ 2 ] B [ F ] C [ P ]

LOCATION:

81V76A22 (VS70-580109E)

PART NUMBER:

CAUSES: CONTAMINATION, MECHANICAL SHOCK, THERMAL SHOCK,

VIBRATION

EFFECTS/RATIONALE:

DATE: 2/13/88 HIGHEST CRITICALITY HDW/FUNC SUBSYSTEM: HYD/WSB FLIGHT: 3/3

MDAC ID: 8766 ABORT: /NA

ITEM: LG RETRACT/CIRC VLV SW

FAILURE MODE: OPEN (ELECTRICAL)

LEAD ANALYST: P. BYNUM SUBSYS LEAD: W. DAVIDSON

## BREAKDOWN HIERARCHY:

- 1) MAIN HYDRAULIC SYSTEM 1
- 2) RETRACT CIRC VALVE
- 3) PANEL R4
- 4) LG RETRACT/CIRC VLV SW

5)

6)

7)

8)

9)

#### CRITICALITIES

FLIGHT PHASE	HDW/FUNC	ABORT	HDW/FUNC
PRELAUNCH:	/NA	RTLS:	/NA
	·		
LIFTOFF:	/NA	TAL:	/NA
ONORBIT:	/NA	AOA:	/NA
DEORBIT:	/NA	ATO:	/NA
LANDING/SAFING	: 3/3		

LANDING/SAFING: 3/3

REDUNDANCY SCREENS: A [NA ] B [NA ] C [NA ]

LOCATION: 32V73A4 (VS70-580109E)

PART NUMBER:

CAUSES: VIBRATION, MECHANICAL SHOCK, STRUCTURAL FAILURE

EFFECTS/RATIONALE:

RETRACT/CIRC VALVE STAYS ENERGIZED WHEN CIRC PUMP IS ON.

REFERENCES: VS70-580109E, SPACE SHUTTLE SYSTEMS HANDBOOK, VOL. II, SECT. 12

DATE:

2/11/88

HIGHEST CRITICALITY HDW/FUNC

SUBSYSTEM: HYD/WSB

FLIGHT:

3/3

MDAC ID: 9091

ABORT:

ITEM:

MDM ISOLATION DIODE

FAILURE MODE: SHORTED

LEAD ANALYST: W. DAVIDSON SUBSYS LEAD: W. DAVIDSON

## BREAKDOWN HIERARCHY:

- 1) HYDRAULIC SYSTEM 1
- 2) LANDING GEAR ISOLATION VALVE
- 3) AFT LCA
- 4) MDM ISOLATION DIODE
- 5)
- 6)
- 7)
- 8) 9)

CRITICALITIES

FLIGHT PHASE	HDW/FUNC	ABORT	HDW/FUNC
PRELAUNCH:	/NA	RTLS:	/NA
LIFTOFF:	/NA	TAL:	/NA
ONORBIT:	/NA	AOA:	/NA
DEORBIT:	/NA	ATO:	/NA
TANDING /CAPING.	2/2		•

LANDING/SAFING: 3/3

REDUNDANCY SCREENS: A [NA ] B [NA ] C [NA ]

LOCATION:

PART NUMBER:

CAUSES: THERMAL STRESS, VIBRATION, MECHANICAL SHOCK

EFFECTS/RATIONALE:

NO EFFECT IN FLIGHT.

REFERENCES: VS70-580109E, SPACE SHUTTLE SYSTEMS HANDBOOK, VOL

II, SECT 12

HIGHEST CRITICALITY HDW/FUNC DATE: 2/11/88

SUBSYSTEM: HYD/WSB FLIGHT: 3/3 ABORT: /NA MDAC ID: 9101

ITEM: VEHICLE ISOLATION DIODE

FAILURE MODE: SHORTED

LEAD ANALYST: W. DAVIDSON SUBSYS LEAD: W. DAVIDSON

## BREAKDOWN HIERARCHY:

- 1) HYDRAULIC SYSTEM 1
- LANDING GEAR ISOLATION VALVE 2)
- AFT LCA 3)
- 4) VEHICLE ISOLATION DIODE

5)

6)

7)

8) 9)

CRITICALITIES

FLIGHT PHASE H	IDW/FUNC	ABORT	HDW/FUNC
PRELAUNCH:	/NA	RTLS:	/NA
LIFTOFF:	/NA	TAL:	/NA
ONORBIT:	/NA	AOA:	/NA
DEORBIT:	/NA	ATO:	/NA
IANDING/SARING.	3/3		

LANDING/SAFING: 3/3

B [NA ] C [NA ] REDUNDANCY SCREENS: A [NA ]

LOCATION: PART NUMBER:

CAUSES: THERMAL STRESS, VIBRATION, MECHANICAL SHOCK

EFFECTS/RATIONALE: NO EFFECT IN FLIGHT.

REFERENCES: VS70-580109E, SPACE SHUTTLE SYSTEMS HANDBOOK, VOL II, SECT 12

HIGHEST CRITICALITY HDW/FUNC DATE: 2/13/88 SUBSYSTEM: HYD/WSB FLIGHT: 3/3

ABORT: 3/3-MDAC ID: 9141

ISO VLV CTL CIRCUIT RESISTOR (1.21K) ITEM:

FAILURE MODE: SHORT

LEAD ANALYST: W. DAVIDSON SUBSYS LEAD: W. DAVIDSON

### BREAKDOWN HIERARCHY:

- 1) HYDRAULIC SYSTEM 1
- LANDING GEAR ISOLATION VALVE 2)
- 3) PANEL R4
- ISO VLV CTL CIRCUIT RESISTOR (1.21K) 4)

5)

6)

7)

8) 9)

#### CRITICALITIES

FLIGHT PHASE	HDW/FUNC	ABORT	HDW/FUNC
PRELAUNCH:	/NA	RTLS:	3/3
LIFTOFF:	/NA	TAL:	3/3
ONORBIT:	/NA	AOA:	3/3
DEORBIT:	3/3	ATO:	3/3
LANDING/SAFING:	3/3	and the second second	A come of the e

REDUNDANCY SCREENS: A [NA ] B [NA ] C [NA ]

LOCATION: PART NUMBER:

CAUSES: VIBRATION, CORROSION, THERMAL STRESS

EFFECTS/RATIONALE:

LOSS OF OVERCURRENT PROTECTION. NO EFFECT ON FLIGHT.

REFERENCES: VS70-580109E, SPACE SHUTTLE SYSTEMS HANDBOOK, VOL II, SECT 12

DATE: 2/13/88 HIGHEST CRITICALITY HDW/FUNC SUBSYSTEM: HYD/WSB FLIGHT: 3/3 3/3 ABORT:

MDAC ID: 9501

HYDRAULIC PRESSURE METER ITEM:

FAILURE MODE: OPEN, SHORT, OUT OF TOLERANCE

LEAD ANALYST: W. DAVIDSON SUBSYS LEAD: W. DAVIDSON

#### BREAKDOWN HIERARCHY:

- HYDRAULIC DISTRIBUTION, MONITORING, AND CONTROL
- 2) HYDRAULIC PRESSURE METER
- 3)
- 4)
- 5)
- 6)
- 7) 8)
- 9)

#### CRITICALITIES

FLIGHT PHASE	HDW/FUNC	ABORT	HDW/FUNC
PRELAUNCH:	3/3	RTLS:	3/3
LIFTOFF:	3/3	TAL:	3/3
ONORBIT:	3/3	AOA:	3/3
DEORBIT:	3/3	ATO:	3/3
LANDING/SAFING:	: 3/3		·

REDUNDANCY SCREENS: A [NA ] B [NA ] C [NA ]

LOCATION:

PART NUMBER:

CAUSES: CORROSION, VIBRATION, PIECE PART FAILURE

EFFECTS/RATIONALE:

LOSE DIRECT ONBOARD HYDRAULIC PRESSURE READING

REFERENCES:

#### APPENDIX F

#### NASA FMEA TO IOA WORKSHEET CROSS REFERENCE/RECOMMENDATIONS

This section provides a cross reference between the NASA FMEA and corresponding IOA analysis worksheet(s) included in Appendix E. The Appendix F identifies: NASA FMEA Number, IOA Assessment Number, NASA criticality and redundancy screen data, and IOA recommendations.

#### APPENDIX F LEGEND

Code	Definition
1	IOA Recommends a Higher Criticality
2	IOA Recommends Additional Failure Mode
3	IOA Recommends A Lower Criticality
4	IOA Recommends Change to a Redundancy Screen
5	IOA Concurs With NASA Analysis
. 6	Delete IOA Failure Mode
. 7	Delete FMEA From CIL
8	Add FMEA To CIL

APPENDIX F

NASA FMEA TO IOA WORKSHEET CROSS REFERENCE / RECOMMENDATIONS

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	: HYDWSB-132						, ,
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	HYDWS8-686	11					NA					1 5	i i
	: HYDWSB-696	11					NA NA			i ·		; ; 5	ı i
•	HYDNS8-698	11	3/3 2/1R					11				ا ا !	· !
	: HYDWSB-605 : HYDWSB-606	11	2/1R 2/1R					11		• !		: 1	. !
* "	: HYDWSB-604		2/1R					11		<u> </u>		! !	
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	: HYDWSB-709	11	_					11		i		; {	ı i
, ,, ,	1 HYDWS8-722	11	2/1R 2/1R			•		11		) !		. u	, i
: 02-6-E0 <b>B</b> -6	: HYDWSB-715	11	41 TK	!	r	Г	ī	11					. , 
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IDE	NTIFIERS	11 N	ASA :	:	IOA RECOM	MENDATIONS *	g
NASA FMEA NUMBER	; IOA : ASSESSMENT NUMBER	HW/F	A B C	CRIT	SCREENS	; OTHER ; (SEE LEGEND CODE)	ISSUI
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02-6 <b>-</b> E10-2	: HYDWSB-704	11 2/1R	( P P P )	1 /	1	1 1	ŀ
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	: HYDWSB-706	11 3/3	I NA NA NA I	1 /	1	}	i i
	: HYDWSB-707	11 3/3	: NA NA NA :	: /	1	i T	ł
02-6-E11-A01	HYDWSB-710	11 3/3	i na na na i	1 /	!	Ţ	ŀ
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	HYDWSB-716	11 3/3	l na na na l	1 /	;	1	1
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02-6-E11-A02	: HYDWSB-711	11 3/3	I NA NA NA I	I = I	!	Ť	}
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02-6-E23-1		11 2/1R	PPP	1	!	1	}
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02-6-E26-1			I NA NA NA I	1 /	!	1	:
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FMEA NUMBER : ASSESSMENT NUMBER : HW/F : A B C : HW/F : A B C : (SEE LEGEND CODE) :  02-6-605-2	IDE	NTIFIERS	11 N	ASA :	!	IOA RECOM	MENDATIONS *	
02-6-605-2		ASSESSMENT NUMBER	¦¦ H₩/F	A B C I	HW/F	A B C	(SEE LEGEND CODE)	ISSUE 
02-6-610-1   HYDWSB-463   1 2/1R   P   P   1		•			/	; ====================================	!	;
02-6-613-2   HYDWSS-486			11 2/1R	PPI	1 /	•		1
02-6-G13-2		HYDWSB-463	11 2/1R	! P P P !	1 /	i NA	1 5	i
02-6-613-4		: HYDWSB-486	11 3/1R	PFPI	1 2/1R	<u> </u>	; 1	; X
22-6-87STEM-2	02-6-613-4	: HYDWSB-488			1 /	! •	) ī	1
102-6-SYSTEM-2	02-6-614-1	HYDWSB-490	11 3/IR	: P	1 /	1	1	1
HITCHSB-402	02-6-H04-1	: HYDWSB-461	11 2/1R	: P P :	1 /	; 1	1 5	í
HYDMSB-414	02-6-SYSTEM-2	: HYDWSB-168	11 2/1R			1	<u> </u>	1
HYDMSB-432		: HYDWSB-402					1	í
HYDWSB-453		HYDWSB-414						i ,
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HYDMSB-471						! !	i 1	!
HYDWSB-474						: :	1 7	, ! Ý
HYDMSB-484						1 F 1		!
HYDMSB-489	•					i	!	!
HYDMSB-494						! ! F	! 2	! X
HYDMSB-49B	•			• • • • •		• •		•
HYDMSB-600						 !	!	•
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HYDMSB-607						!		!
HYDMSB-609					1 /	1	1	
HYDWSB-620					1 /	<b>!</b>	f 3	ı ı
HYDMSB-623					1 /	!	; i	<b>!</b>
HYDMSB-629				1 P P P 1	1 /	[	!	ī Ī
HYDWSB-633			11 2/1R	P P P	ì i	ī I	· ·	ì
HYDMSB-633		HYDWSB-632	11 2/1R	( P P P )	1 /	1	:	i
HYDWSB-677			11 2/1R	: P	1 /	1	1	1
HYDMSB-699		: HYDWSB-673	11 2/1R	PPP:	1 /	1	:	i
HYDMSB-708		: HYDWSB-677	11 2/1R	! P P P !	1 /	I 1	<u>}</u>	
HYDWSB-713		HYDWSB-699	11 2/1R	• • • • •		;	1	
HYDWSB-719		: HYDWSB-708				1	!	
HYDWSB-721		HYDWSB-713				1	<u> </u>	
HYDWSB-725			To a	1 - 1			<u>.</u>	į
HYDMSB-730						<u>;</u>	•	1
02-6-SYSTEM-3						1	i ,	i t
HYDMSB-465		•				i	† †	<u>1</u>
HYDMSB-466	02-6-SYSTEN-3					i 	i • •	1 1 Y
HYDMSB-467						, † ,		i A
HYDWSB-468				• • • • •		i •	i	1 A 1
02-6-SYSTEM-4				2 7 7		1	I Į	! !
02-6-SYSTEM-5						1	• •	:
02-6-SYSTEM-7   HYDWSB-637   1 3/3   NA NA NA   1 / 1						! !	• •	
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	02-6-SYSTEM-7	! HIDMPR-07\				! !	, ,	1

IDENT	IFIERS	11	NF	1SA						IDA RECOM	MENDATIONS +	. <b></b>
NASA FMEA NUMBER	IDA ASSESSMENT NUMBER	11	HW/F	SI A			C	H	HW/F	SCREENS	OTHER (SEE LEGEND CODE)	ISSUE
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	HYDWSB-639	1 !	3/3	N	A N	A	NA	! ! ! !	1	[		
05-66-00100-1B	: HYDWSB-8005X	11	2/1R	F	F		P	! !	1	}	8	X
05-66-200100-10A	HYDWSB-862	11	3/3	, '				! !	1	!		
	: HYDWSB-863	;;	3/3	}				! !	1	; F		
05-66-200100-10B	HYDWS8-856	]	<b>3/</b> 3	:				;;	1	] 		
	: HYDWSB-857	1 t	3/3	•				11	1	;		
	: HYDWSB-859	1 1	3/3	l				11	1	1		
	HYDWSB-864	1 1	2/3	,				; ;	I	1		
	HYDWSB-865	Н	3/3	1				!!	1	1		;
05-46-200100-10	HYDWSB-851	11	3/1R	P	P	)	P	11	1		5	
05-66-200100-1E	: HYDWSB-850	!!	3/1R	P	P	,	P	† †	1	!	5.7	X
05-66-200100-16	HYDWSB-867	11	3/3	) 				7 1 1 1	1	1		
	: HYDWSB-870	: :	3/3	ļ				1 1	1	1		i
05-66-200100-1H	: HYD <b>WS8-</b> 848	1 1	3/1R	P	P		F	; ;	1	!	5	i
	: HYDWSB-869	11	3/1R	۱P	P	ı	P	] ; ] i	1	1	1 5	1
05-66-200100-11	HYDWSB-866	11	3/1R	P	P	)	P	; ; ; ;	I	1	5	
05-66-200100-1JA	HYDWSB-852	11	3/3	i				H	1	1	}	
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05-66-200100-1JB	I HYDWSB-854	1 1	3/1R	P	P	)	P	¦ ;	1	1	}	Ī
05-6G-200100-1JC	: HYDWSB-855	H	3/3	į				;;	1	1		i
05-66-200100-1JE	: HYDWSB-B73	11	3/3	. N	A N	A	NA	11	1	1		1
05-66-200100-1JF	¦ HYD₩SB-872	11	3/1R	P	F	:	P	;;	1	•	i	i
05-66-200100-1JFA	: HYDWSB-B72A	;;	3/1R	P	F	•	P	11	1	1		ļ
05-66-200100-136	HYDWSB-871	11	3/3	i				; ;	1	1	1.5	i
05-66-200100-1JH	HYDWSB-854A	;;	3/1R	P	P	,	Ρ	11	1	1		i
05-6G-200100-1JI	: HYDWSB-B55A	11	3/3	l E				1 1	1	!		
05-66-200300-1A	: HYDWSB-876	11	3/1R	P	P		P	; ;	/3	!	2.3	X
	: HYDWSB-B77	11	3/1R	l P	P	}	P	1 1	ľ	1	2,5	<b>X</b>
05-66-200300-18	HYDWSB-875	11					NA			!		i
05-6G-200300-1C	HYDWSB-8751X	11					NA			!		i
05-6 <b>6-</b> 200300-1D	HYDWSB-B752X	11					NA		•	1		í
05-4G-200300-1E	HYDWSB-8753X	11	3/3							1		i :
05-66-200300-1F	: HYDWSB-B754X	11								1		i
05-66-200300-16	HYDWSB-8755X	11		•								i 1
05-66-200300-1I	: HYDWSB-8756X	11										i
05-66-200300-1J	HYDWSB-8757X	11		l P	P	,				,	•	i
05-66-200300-1KA	HYDWSB-8758X	- 11		1				11		1		i
05-46-200300-1KB	HYDWSB-8759X	11		í				11		i		
05-66-200300-1KC	HYDWSB-8761X	11		i				11			1 2, 3	X
05-66-200300-1KD	HYDWSB-8762X	11		¦ 				11		i	2, 3	i A
05-66-200300-1KE	HYDWSB-8763X	11		۱۲	F	•		11		i	i 	: X
05-6G-200300-1KF	HYDWSB-8764X	11		: 				1 1			2, 3	i X
05-66-2003000-1KG	HYDNSB-8765X	11		! P	N	A		11		¦ F	i : <b>c</b>	! !
05-46-2003000-1KH	HYDWSB-8766X	11		i 				11		i	1 5	; (
05-66-200400-10	HYDWSB-825	11					NA				i 1 <b>7</b>	i !X
05-66-200400-1A	HYDWSB-846	11						!!		! NA NA NA .	i 3	1 Å
05-66-200400-1B	HYDWSB-8461X	11						11		i	i I	1 •
05-6G-200400-1E	HYDWSB-8462X	1;						11		i 	i	i 1
05-66-200400-1D	HYDWSB-B42	; ;			P	,		;;		i NA	; i	 
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05-66-200400-1JA	i DENTI	FIERS		N	ASA				! !		10	A R	ECOM	MENDATIONS +	
05-68-200400-1E						_		C	1 1	HW/F	A		C	(SEE LEGEND CODE)	ISSUE :
105-68-200400-15	! 05-AR-200400-1F	: HYDWSB-843	11	3/1R		F	 P		•		•	NA		•	X
O5-66-200400-11					: P	F	P	P	; ;	/3	NA	NA	NA	; 3	X 1
05-66-200400-1H					; P	F	P	P	: :	/3	NA	NA	NA	1 3	X ;
HYDMSB-838		•	11	3/1R	: P	F	P	Ρ	H	/3	NA	NA	NA	1 3	χ :
05-66-200400-111	1	HYDWSB-844	11	3/1R	1 P	F	9	P	: :	/3	NA	NA	NA	3	X
105-66-200400-112	1 05-66-200400-11-1	HYDWSB-838	! !	3/3	l N	A I	NA	NA	; ;	1	ŀ			1 1	1
Non-Be-200400-112	1 05-66-200400-111	: HYDWSB-834	!!	3/3	i N	A N	A	NA	: :	/ /					1
	: 05-6G-200400-112	: HYDWSB-835	11	3/1R	; P	F	P	-						•	
05-66-200400-1JA	1				• •	-		•			NA	NA	NA	3	I I i
1	: 05-46-200400-1J										i 			_	
HYDMSB-827	, 40 00 001111							•			NA	NA	NA		λi
05-66-200400-1L1	1 05-66-200400-1K														! <b>!</b>
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O5-66-200400-1N2	1 45 -0 534108 INI							•							
105-66-200400-1NA															X :
05-66-200400-INE				• . •				•			11111	1111	****		
05-66-200400-1NC						_		-			NA	NA	NA	3	X ;
O5-66-200400-IP						•									X :
HYDMSB-831						•		•							1
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HYDMSB-829	! 05-4G-200400-19			3/3	]						NA	NA	NA		÷
HYDNSB-832	!			3/3	;				! !	1	NA	NA	NA	}	;
05-66-201000-1	1		::	3/3	1				11	. / -	NA	NA	NA		[
05-66-20100-1	!	: HYDWSB-833	1 1	3/3	1				1 1	1	•			. 1	;
05-66-20100-1	1 05-66-200700-1	HYDNSB-847	"	3/3	ì	A N	A	NA	! !	. / 1				}	Ţ
05-66-201100-1	: 05-66-201000-1	HYDWSB-814	] 1 ] ;	2/1R	; P	F	F	P	; ;	/ /	1			1 5	1
HYDWSB-805	1 05-46-201000-2											_	_		, ,
HYDMSB-B07	; 05-66-201100-1										P	P	P	1	, X ;
HYDWSB-808	<b>!</b>												i	; . =	
HYDMSB-809	}	Caracteristic Colors					0.00			4.4				i Di , i i i i i i i i i i i i i i i i i i	
HYDMSB-810	1									_	i 1 5	5	D	; ;	y 1
HYDMSB-811												r	r	: <b>.</b>	
05-6G-201200-1	1													! 5	
HYDMSB-801	1 05-48-201200-1										P	5	P	·	χ ;
HYDMSB-802	1 09-00-201200-1										,	•	•	•	1
HYDMSB-B03	1										P	P	Р	1	X i
HYDNSB-B04	!			-										1 1	X i
05-66-2053-1	!														, j
05-66-2054-1	05-46-2053-1			_							•		!		:
05-66-2054-1A	1 05-46-2054-1										[			5	;
05-66-2055-1	: 05-66-2054-1A		11				A				<b>!</b>			;	;
05-66-2055-3		HYDWSB-913	: :				۱A							1 5	. I
05-66-2056-1	1 05-66-2055-2										1	NA			1
1 05-6G-2056-3	05-66-2055-3	! HYDNSB-911											!		i
1 05-66-2057-1	1 05-66-2056-1														
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	1 05-66-2057-1			2/1R	; P	F	۲				i			i ,	i î
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NASA FMEA NUMBER	I IDA	11		1	A 8	ì	C	; ;	HW/F	ł Á	8		(SEE LEGEND CODE)	155U  
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5-66-2058-1	HYDWSB-909	11	3/1R	1	P F	•	Р	11	1	;			: 5	ļ
)5-66-2058-1A	HYDWSB-9091X	11	3/3	!	NA N	IA	NA	11	1	! •		!	,	1
)5-66-2059-1	HYDWSB-908	11	3/3	1	NA N	łA	NA	;;	1	1			}	;
)5-6G-2060-1	HYDWSB-907	11	3/3	!	NA N	Al	NA	Н	1	!		ļ	,	}
)5-66-2060-1A	HYDWSB-907A	11	3/3	;	NA N	łA	NA	11	1	!			1	1
5-56-2061-1	: HYDWSB-906	1 1	3/3	! !	NA M	ΙA	NA	11	1	?			}	ł
05-46-2061-1A	HYDWSB-906A	11	3/3	1	NA N	ΙA	NA	11	1	1				;
)5-6G-2062-1	HYDWSB-905	11	3/3	: 1	NA N	Αŀ	NA	11	1	}		1		!
05-66-2063-1	HYDWSB-903	11	3/3	}	NA N	۱A	NA	11	1	1			!	1
00 00 1000 .	HYDWSB-904	11	3/3	1	NA N	Α	NA	11	1	!				!
05-66-2064-1	HYDWSB-900	11	3/3	!	NA N	Αŀ	NA	Н	1	!				;
)5-66-20 <b>64-</b> 2	: HYDWSB-899	11	2/1R						_	ţ			; 5	I 1
05-46-20 <b>6</b> 5-1	HYDWSB-898	11			NA 1					{			<b>\</b>	i
05-60-2065 1 05-60-2065-1A	HYDWSB-897	!!			NA N					ł			}	1
05-66-2066-1	HYDWS8-896	11		-	NA 1					}			; 5	1
05-66-2066-1A	HYDWSB-895			-	NA 1					}			1 	1
05-46-20 <b>6</b> 7-1	HYDWSB-894	11	• • •		NA I			-		!		-	; 5	1
05-66-2067-1A	: HYDWSB-893	- ; ;		-	NA I								·	ł
25-66-2068-1	: HYDWSB-872	- 11			NA 1					:			! 5	]
03-66-2068-2	: HYDWS8-891A	- ; ;	2/1R			•		::		:			 : 5	!
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